



Service Manual

Service Manual

KP105/106b



Model : KP105/106b



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1. INTRODUCTION

1.1 Purpose

This manual provides the information necessary to repair, description and download the features of this model.

1.2 Regulatory Information

A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it.

The manufacturer will not be responsible for any charges that result from such unauthorized use.

B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

1. INTRODUCTION

E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

H. Electrostatic Sensitive Devices

ATTENTION

Boards, which contain Electrostatic Sensitive Device (ESD), are indicated  by the sign. Following information is ESD handling:

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

2. PERFORMANCE

2.1 H/W Features

Item	Specifications
Band	GSM DUAL Band(900/1800)
Type	Bar type
Dimension	101 * 46 * 12.9mm
Weight	65g
Battery	900mAh Li-ion
Talk Time	Up to 6.5 hrs @GSM900, TX Level : 10 Battery performance may vary depending on network and phone usage
Stand-by Time	Up to 630 hrs @Paging period : 9 Battery performance may vary depending on network and phone usage
RTC	Under 1 minute when removed battery.
Antenna	Internal Type(Dual-band)
LCD(Main)	1.52"(128x128 pixels), 65K Color STN LCD
KEY Back Light	Yes
KEY Back Light color	Blue
Vibrator	Yes
Speaker&Receiver	Yes(18x10 Dual Mode)
C-MIC	Yes
Earphone Jack	Mono or Stereo(Optional)
SIM	Yes(Plug in Type) : 1.8V & 3.0V
MIDI	16 poly
I/O Connect	18 Pins (included Earphone Jack)

2. PERFORMANCE

2.2 S/W Features

Function	Detail Item		Specification	Etc.
Operating System	OS	O	OSE	
Data	Circuit	O		
	Packet	X		
Connectivity	Infrared (IrDA)	X		
	Bluetooth	X		
	USB	X		
	USB Mass storage	X		
	RS232	O		
Voice Function	Voice Recording	X		
	Voice Command	X		
	Answering machine	X		
Memory	User Memory	O	TBD	Under 300KB
		X	MMS	
		X	Pictures (Still Image & Moving Image)	
		X	MP3 (Music Contents)	
		X	Java Contents	
		O	Wallpaper	3 bitmap images
		O	Ringtone	10 MIDI Ringtones
		X	external memory (microSD)	
Camera	Camera Module	X		
Audio	Voice Codec	O	FR, HR, EFR, AMR-NB	
	AMR	O		
	FM Radio	O		
	Integrated handsfree speaker	O	Speaker phone mode	

2. PERFORMANCE

Function	Detail Item		Specification	Etc.
Display	RSSI	O	6 level	
	Battery Level	O	5 level	
	RTC	O		
	Multi Language	O	Basic:English Max. 4 language of Latin 2 or 3 language of etc.	
	Quick Access Mode	X		
	PLMN/Service Indicator	O		
	Dimming Clock	X		
	Dual Clock	X	Local Time / Selected Area Time	
Normal Features	Last Dialed Number	O	20	
	Last Received Number	O	20	
	Last Missed Number	O	20	
	Scratch Pad Memory	X		
Call Manage-ment	Call Waiting	O		
	Call Swap	O		
	Call Retrieve	O		
	Auto Answer	X		
	Automatic Redial	O		
	Calling Line identification	O		
	Full Call divert	O		
	Speed Dialing	O		
	Last Number Redial	O		
	Multi-party Call (Conference Call)	O		
	Explicit Call Transfer	X		

2. PERFORMANCE

Function	Detail Item		Specification	Etc.
Network	Automatic Network Selection	O		
	Manual Network Selection	O		
	Network Service Status	O		
DTMF	DTMF Signaling	O		
	DTMF Enable & Disable	O		
Audio	Key Tone Volume	O	6 Level (Include Mute)	
	Ring Tone Volume	O	6 Level (Include Mute)	
	Ring Tone Pattern	O	10Type(fixed)	
	Ring Type Silent	O	Vibrator & Ring (Indicator)	
	Earpiece Volume	O	6 Level (Include Mute)	
	Mute	O		
Cell Broadcast	Read Cell Broadcast	O		
	Cell Broadcast Categories	O		
	Cell Broadcast Message Language	O		
Phone Book	Entry	O	300	
	Field	O	Office, Mobile, Home	
	Numeric Store and Recall	O		
	Alphabetic Store	O		
	Alphabetic Recall	O		
	Scroll by alphabetic or numeric order	O		
	Last Number Dialed	O	20	
	Last Number Missed	O	20	
	Last Number Received	O	20	
	Copy & Move	O		
	Fixed Dial Number	O		
	Barred Dial Number	X		
	Service Dial Number	O		
	Email Entry	X		
	Picture ID	X		
	Video Caller ID	X		
	My Name card	X		

2. PERFORMANCE

Function	Detail Item		Specification	Etc.
Supp. Services	Call Forwarding	O	All Incoming Calls,	
		O	No Reply	
		O	On Busy,	
		O	Not reachable	
	Call Barring	O	All Outgoing Calls,	
		O	International Calls,	
		O	Calls except to Home Country incoming Calls,	
		O	All incoming Calls when roaming	
	Conference Call	O	up to 5 calls	
SIM	Plug?In Type	O	1.8V & 3 V	
	SIM Lock	O	Service Provider / Network Lock	
	SIM Toolkit	O	Class 1, 2, 3	
	Prepaid SIM Operation	O		
	Mega SIM	X		
Short Messaging Manage-ment	Read Message	O		Not Support EMS
	Write and Edit Message	O		
	Send and Receive Message	O		
	Reply to Message	O		
	Forward Message	O		
	Extract Number from Message	O		
	Message Status	O		
	Message Unread Indicator	O		
	Settable Message Center Number,	O		
	Reply Path and Validity	O		
	Visible and Audible Message Receive Alerting	O		
	Voice Mail	O		
	Settable Voice Mail Center Number	O		
	Message Protocol	O	Normal, Fax, National Paging, Email, X400, ERMES, Voice	
	Message Overflow Indicator	O		
	Message Center Number	O		
	Help Menu	X		

2. PERFORMANCE

Function	Detail Item		Specification	Etc.
Sound contents	Ringtones	O		
	Karaoke	X		
	Stutter Sound	X		
	Flip tone	X		
	Button tone	O		
	Others	X		
Miscellaneous Function	Development & Test Facility	O		
	Field Test Facility	O		
	Display Software Version	O		
	IMEI	O		
Text Input	Language	O	Selectable Auto Language	
	Predictive word input	O	T9	
Scheduler	Schedule	O	20 input (20 character)	
	To Do List	X	50 input	
	Memo	O	20 input (40 character)	
	D-day counter	X		
	Send via Bluetooth	X	Schedule, Memo, To Do list, Messaging	
World Time	Setting Local Time	O		
	Display Two Number of Cities Time	X	Dual clock	
	Daylight saving	X	Summer time calibration function	
	NITS	X	Automatic setting as country code in SIM	
Unit converter		O	Currency, Surface, Length, Weight, Temperature, Volume, Velocity	
Stop watch		O		
Calculator	Calculation	O	+ - * /	
PC Sync	Phone Book Sync	X		
	Message Sync	X		
	Multimedia Contents Sync	O	ringtone, wallpaper 1EA Download	
	Scheduler Sync	X	E-MAIL, EMS, Schedule, Phonebook, Name card etc.	
Sync ML	DS	X		
	DM	X		
Game		O	Sudoku support	
Menu	Quick Access Mode (Profile)	X		
External Interface	Electrical Man Machine Interface	O		
	Development and Test Facility	O		

2. PERFORMANCE

Function	Detail Item		Specification	Etc.
Handset	Restore Factory Setting	O		
	Read Software Version	O		
	Battery Charging Mode	O		
Security	Emergency Call	O		
	Handset Lock	O		
	Security Code	O	Delete all	
	SIM Lock	O		
	Key guard	O		
Real Time Clock	12/24 hour	O		
	Calendar	O	Automatic Leap Year Adjustment	
	Time Zone	O		
	Daylight saving	X		
	Alarm Manager	O	Once, Daily, Mon~Fri, Mon~Sat	
	Dimming Clock	X		
	Power-off Alarm	O		
	On Alarm Event	O	Display	
Accessory	Hand strap	X		
	Embedded microSD Card	X		
	microSD Adapter	X		
	Stereo earmic	O	EarMic Type	Provides optionally only for supporting FM radio function.
	earmic w/music remote controller	X		
	Neck strap	X		
	LCD Cleaner	X		
	Holster	X		
	Data cable	O	RS232 cable	Option
	CD	X		
	Holster charger	X	Standard battery Back-up and Holster function	
	additional standard battery	X		
	Extended Battery	X		
	Desktop Charger	X		
	Cigar Lighter Adapter	X		
	Portable Handsfree	X		
	Bluetooth headset	X		
	Bluetooth stereo earset controller	X		
	Car kit	X		
	Leather Pouch	X		
	Stylus Pen	X		
	Luxury Package	X		
	Compass	X		

3. TECHNICAL BRIEF

3. TECHNICAL BRIEF

3.1 Digital Main Processor(PMB7880)

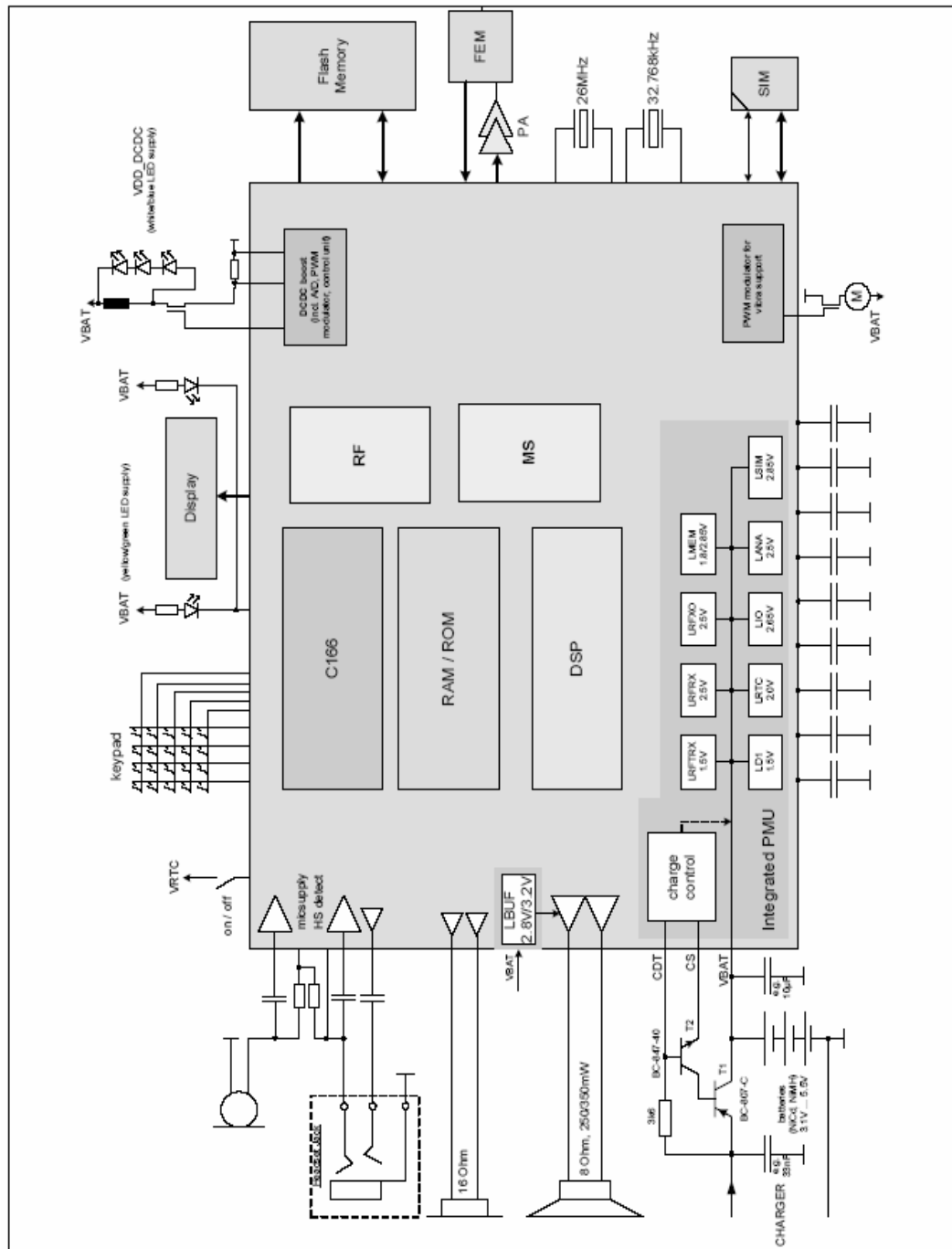


Figure. 3-1 PMB7880 FUNCTIONAL BLOCK DIAGRAM

3.1.1 Overview of E-GOLDvoice

The E-GOLDvoice is a GSM baseband modem including RF transceiver covering the low bands GSM850 /GSM900 and high bands GSM1800 / GSM1900 bands.

E-GOLDvoice is Dual Band, therefore, it supports by default a low / high pair of bands at the same time:

1. GSM850 / GSM1800
2. GSM850 / GSM1900
3. GSM900 / GSM1800
4. GSM900 / GSM1900

The E-GOLDvoice is optimized for voice-centric Mobile Phone applications.

The E-GOLDvoice is designed as a single chip solution that integrates the digital, mixed-signal, RF functionality and a direct-to-battery Power Management Unit.

The transceiver consists of:

- Constant gain direct conversion receiver with an analog I/Q baseband interface
- Fully integrated Sigma/Delta-synthesizer capability
- Fully integrated two-band RF oscillator
- Two-band digital GMSK modulator with digital TX interface
- Digitally controlled crystal oscillator generating system clocks.

The E-GOLDvoice supports a direct battery connection, hence eliminating the need for an external Power Management Unit. The E-GOLDvoice has different power down modes and an integrated power up sequencer.

The E-GOLDvoice is powered by the C166®S MCU and TEAKLite® DSP cores. The operating temperature range from -40°C to 85°C. It is manufactured using the 0.13 μ m CMOS process.

3. TECHNICAL BRIEF

3.1.2 Features

- ▶ Baseband
 - High performance fixed-point TEAKlite DSP
 - C166S high performance microcontroller
 - There are several Interfaces:
 - I2S interface for DAI connections (for Tape Approval)
 - High Speed SSC Interface for connection of external peripherals
 - SIM Interface
 - Keypad Interface (6x4 or 5x5 keys)
 - EBU for external RAM/FLASH connection
 - Asynchronous serial interface
 - JTAG Interface
 - Black & white and color displays are supported
 - PWM source to drive vibrator
 - Keypad and display backlight supported.
- ▶ Receiver
 - Constant gain, direct conversion receiver with fully integrated blocking filter
 - Two integrated LNAs
 - No need of interstage and IF filter
 - Highly linear RF quadrature demodulator
 - Programmable DC output level
 - Very low power budget.
- ▶ Transmitter
 - Digital Sigma-Delta modulator for GMSK modulation, typical -163.5 dBc/Hz@20 MHz
 - Single ended outputs to PA, Pout = +3.5 dBm
 - Very low power budget.
- ▶ RF-Synthesizer
 - $\Sigma\Delta$ Synthesizer for multi-slot operation
 - Fast lock-in times ($< 150 \mu\text{s}$)
 - Integrated loop filter
 - RF Oscillator
 - Fully integrated RF VCO.
- ▶ Crystal Oscillator
 - Fully digital controlled crystal oscillator core with a highly linear tuning characteristic.

- ▶ Mixed Signal and Power Management Unit
 - DC/DC boost for voltages up to 15V for driving White or Blue LEDs
 - 8-Ohm loud speaker driver (250/350mW)
 - 16-Ohm earpiece driver
 - 32-Ohm headset driver
 - 4 measurement interfaces (PA temperature, battery voltage, battery temperature, and ambient temperature)
 - Differential microphone input
 - System start up circuitry
 - Charger circuitry for NiCd, NiMh and Lilon cells
 - Integrated regulators for direct connection to battery.

3. TECHNICAL BRIEF

3.1.3 GSM System Description

The E-GOLDvoice is suited for mobile stations operating in the GSM850/900/ 1800/1900 bands.

In the receiver path the antenna input signal is converted to the baseband, filtered, and then amplified to target level by the RF transceiver chipset.

Two A-to-D converters generate two 6.5 Mbit/s data streams. The decimation and narrowband channel filtering is done by a digital baseband filter in each path.

The DSP performs:

1. The GMSK equalization of the received baseband signal (SAIC support available)
2. Viterbi channel decoding supported by an hardware accelerator.

The recovered digital speech data is fed into the speech decoder.

The E-GOLDvoice supports fullrate, halfrate, enhanced fullrate and adaptive multirate speech CODEC algorithms.

The generated voice signal passes through a digital voiceband filter. The resulting 4 Mbit/s data stream is D-to-A converted by a multi-bit-oversampling converter, postfiltered, and then amplified by a programmable gain stage.

The output buffer can drive a handset ear-piece or an external audio amplifier, an additional output driver for external loud speaker is implemented.

In the transmit direction the differential microphone signal is fed into a programmable gain amplifier.

The prefiltered and A-to-D converted voice signal forms a 2 Mbit/s data stream. The oversampled voice signal passes a digital decimation filter.

The E-GOLDvoice performs speech and channel encoding (including voice activity detection (VAD) and discontinuous transmission (DTX)) and digital GMSK modulation.

In the RF transceiver part, the baseband signal modulates the RF carrier at the desired frequency in the 850 MHz, 900 MHz, 1.8 GHz, and 1.9 GHz bands using an I/Q modulator. The E-GOLDvoice supports dual band applications.

Finally, an RF power module amplifies the RF transmit signal at the required power level. Using software, the E-GOLDvoice controls the gain of the power amplifier by predefined ramping curves (16 words, 11 bits).

For baseband operation, the E-GOLDvoice supports:

- Making or receiving a voice call
- Sending or receiving an SMS.

3.1.4 PMU Details

The E-GOLDvoice includes battery charger support (various sensor connections for temperature, battery technology, voltage, etc.) and a ringer buffer. E-GOLDvoice avoids the need for an external power management component because its internal power management unit contains:

- Voltage regulators for the On-chip and Off-chip functional blocks
- Charger circuitry for NiCd, NiMh and Lilon cells.

3.1.5 Bus Concept

The E-GOLDvoice has two cores (a microcontroller and a DSP), each with its own bus. There is an interconnection between the TEAKlite bus and the C166S X-Bus.

3.1.6 C166S Buses

The C166S is connected to three buses:

1. Local Memory (LM) bus
2. X-Bus
3. PD-Bus.

3.1.7 TEAKLite Bus

The TEAKlite is connected to the TEAKlite bus.

3.1.8 Bus Interconnections

The interconnection between the X-Bus and the TEAKlite Bus uses:

- Multicore Synchronization
- Shared Memory.

3.1.9 Clock Concept

The E-GOLDvoice has a flexible clock control.

3.1.10 Interrupt Concept

The C166 MCU carries out the E-GOLDvoice interrupt system.

3.1.11 Debug Concept

The E-GOLDvoice includes a multi-core debug. The C166 and TEAKlite cores can be debugged in parallel with:

- A single JTAG port (that is, on a single host)
- Mutual breakpoint control.

3. TECHNICAL BRIEF

3.1.12 C166 Debug Concept

The debugging of the C166 uses the OCDS and the Cerberus.

3.1.13 TEAKLite Debug Concept

TEAKlite debugging uses the OCEM and the SEIB.

3.1.14 Power Management

The E-GOLDvoice provides the power management unit (PMU) for the complete mobile phone application. The integrated PMU is directly connected to the battery and provides a set of linear voltage regulators (LDO's).

These LDO's generate all required supply voltages and currents needed in a low feature mobile phone.

A charger control circuit charges NiCd, NiMH and Lilon batteries.

The charger control supports hardware controlled pre-charging and software controlled charging. It offers a wide charger voltage range, making halfwave/full-wave charging with cheap transformers possible. White/blue backlight generation is supported with a special driver for very a low external parts count. Power consumption during operation phases is minimized due to flexible clock switching. In the Standby Mode most parts of the device are switched off, only a small part is running at 32kHz and the controller RAM is switched to a power saving mode. The TEAKLite ROM can be switched off during Standby via SW.

3.1.15 On-Chip Security Concept

Secure boot is based on a public/private key approach. Flash images that are not signed with the private key during phone manufacture cannot be loaded.

Verification of the Flash code is done with the public key. The public key as well as hash and verify algorithms are stored in the ROM, which ensures a hardware secured boot procedure.

The following security features are supported:

- Prevention of illegal Flash programming
- Flash programming makes use of the E-GOLDvoice ID for personalization checks with IMEI and SIM-lock protection

The security features use the following mechanism:

- Boot ROM flow:
 - Controls the boot transition to external flash
 - Controls the flash update
- Flash tied to the individual chip via an ID using e-fuses, that is, each E-GOLDvoice chip has its own fused ID.

Further details on the E-GOLDvoice security concept are not publicly documented.

3.1.16 Asynchronous Operation Mode Concept

The E-GOLDvoice can operate in either:

- The traditional synchronous mode with the 26MHz system clock synchronized on the base station
- A special asynchronous mode (XO concept).

In the asynchronous mode the 26MHz clock input is not synchronized with the base station; the residual frequency offset is compensated in the digital signal processing domain. This processing includes frequency and timing compensation of the baseband and voiceband signals.

3. TECHNICAL BRIEF

3.2 Power Amplifier Modul(SKY77518)

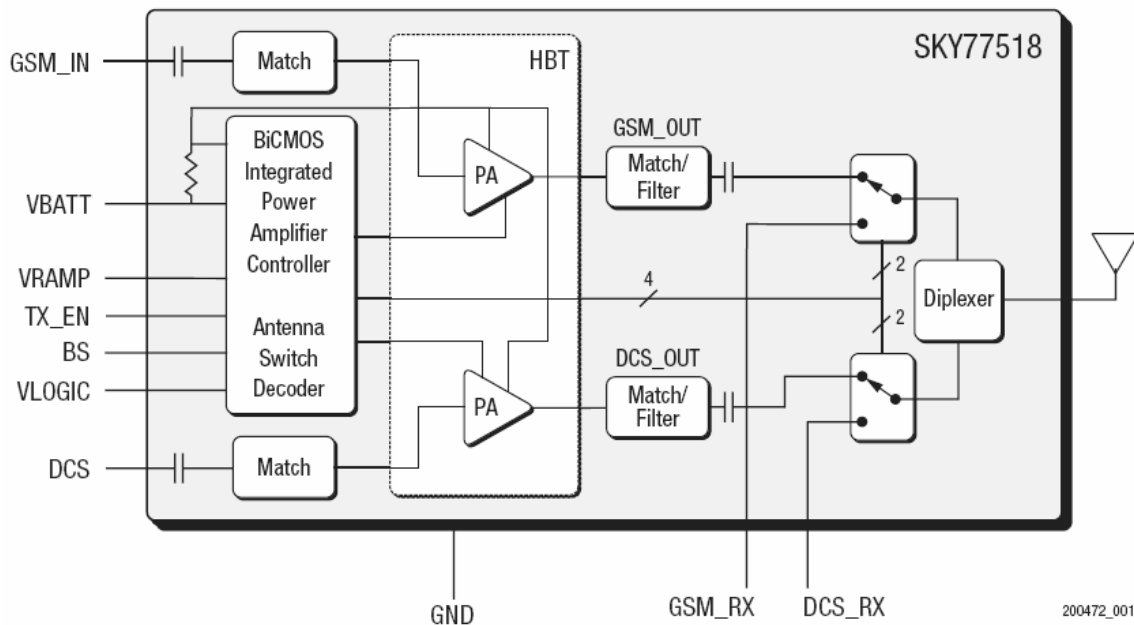


Figure. 3-2 SKY77518 FUNCTIONAL BLOCK DIAGRAM

The SKY77518 is a transmit and receive front_end module(FEM) with integrated Power Amplifier Control for dual_band cellular handsets comprising GSM900 and DCS 1800 Operation. Designed in a low profile, compact form factor, the SKY77518 offers a complete transmit VCO-to-Antenna and Antenna-to-Receive SAW filter solution.

The module consists of a GSM900 PA block and a DCS1800 PA block, impedancematching circuitry for 50ohm input and output impedances, Tx harmonics filtering, high linearity and low insertion loss PHEMT RF switches, diplexer and a Power Amplifier Control (PAC) block with internal current sense resistor. A custom BiCMOS integrated circuit provides the internal PAC function and decoder circuitry to control the RF switches. The two Heterojunction Bipolar Transistor (HBT) PA blocks are fabricated onto a single Gallium Arsenide (GaAs) die.

3. TECHNICAL BRIEF

One PA block supports the GSM900 band and the other PA block supports the DCS1800 band. Both PA blocks share common power supply pads to distribute current.

The output of each PA block and the outputs to the two receive pads are connected to the antenna pad through PHEMT RF switches and a diplexer. The GaAs die, PHEMT die, Silicon (Si)die and passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold.

Band Selection and control of transmit and receive modes are performed using two external control pads. Refer to the functional block diagram in Figure 3-2. The Band select pad (BS) selects between GSM and DCS modes of operation. The transmit enable (TX_EN) pad controls receive or transmit mode of the respective RF switch (TX = logic 1). Proper timing between transmit enable (TX_EN) and Analog Power Control (VRAMP) allows for high isolation between the antenna and TX-VCO while the VCO is being tuned prior to the transmit burst.

The SKY77518 is compatible with logic levels from 1.2V to VCC for BS and TX_EN pads, depending on the level applied to the VLOGIC pad. This feature provides additional flexibility for the designer in the selection of FEM interface control logic.

3.4 RTC(32.768KHz Crystal)

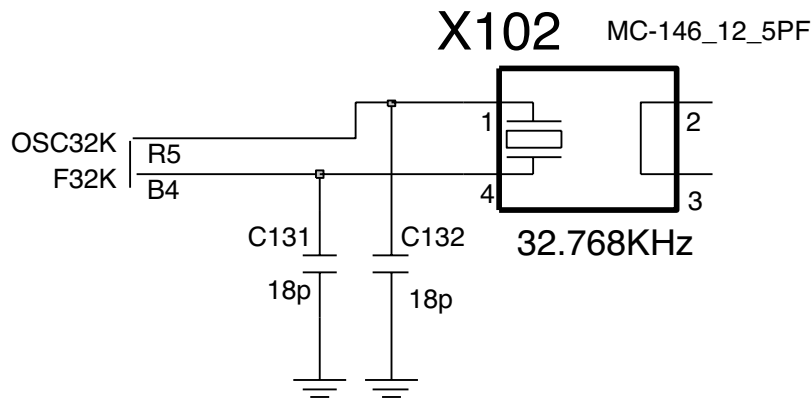


Figure. 3-4 E-Gold Voice RTC Interface

The integrated Real Time Clock (RTC) is able to provide programmable alarm functions and external interrupts. Due to its extreme low power consumption the RTC can be supplied from a small backup battery. This allows the generation of external interrupts, even when the main PMB7880 supply voltage is switched off. For this purpose the RTC is powered by own voltage supply pins VDD_RTC and VSS_RTC.

The RTC shall be driven by a 32.768 kHz (32k) clock which needs to be applied via the PMB7880 F32K and OSC32K pins. The clock can be fed from either an external clock source or use the on chip 32 KHz oscillator module.

The low clock frequency and the optimized low power design give the possibility to run the chip with a minimum of power dissipation. For example, for this specific application the 26 MHz reference oscillator can be switched off during system standby and a lowpower time reference can be kept when the 32k clock is provided to the RTC.

The RTC consists of an PMB7880 specific RTC shell, containing the RTC macro, as well as the 32 kHz oscillator, as described in the following sections. The module RTC Shell solely performs level translation of the 32KHz clock to the VDD_LD1 power supply domain, and is not functionally associated with the RTC.

3. TECHNICAL BRIEF

3.5 LCD Interface(3-wire SPI interface)

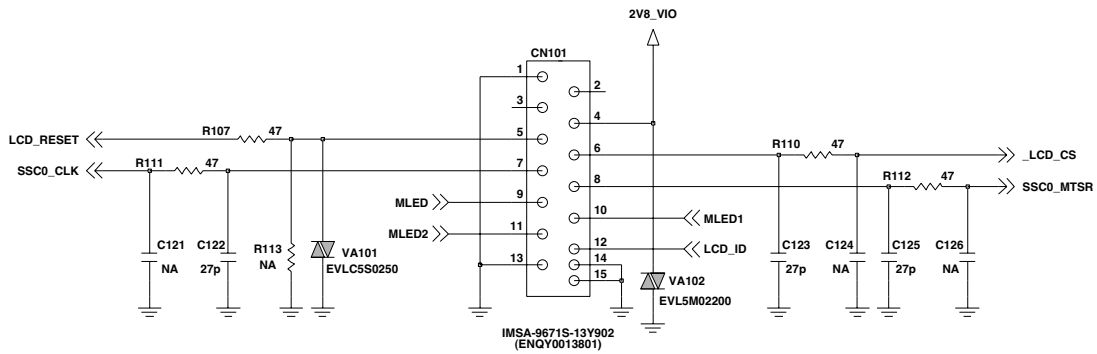


Figure 3-5-1. LCD Interface

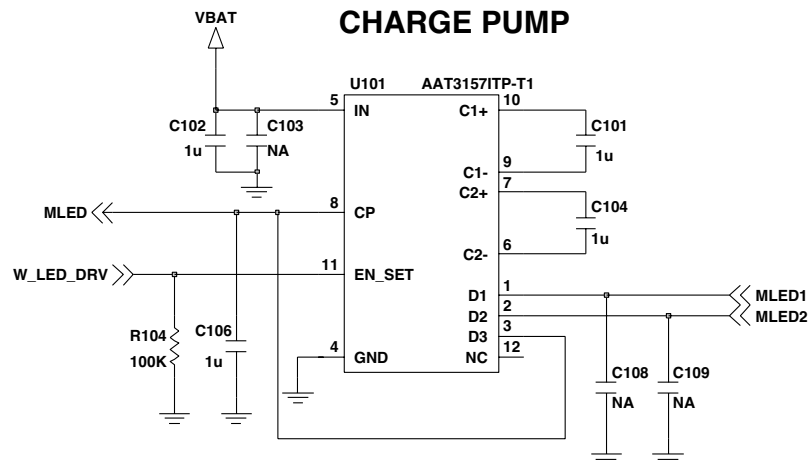


Figure 3-5-2. Charge pump interface

Signals	Description
_LCD_CS	This signal enable to access to the driver IC of LCD.
SSC0_MTSR	This signal transfer serial data to driver IC.
SSC0_CLK	This signal transfer serial clock to driver IC.
LCD_RESET	This signal makes driver IC to HW default status.
MLED	This signal provide power to white LEDs.
MLED1/2	This signal be feed back from white LEDs.
2V8_VIO	This signal provides power to LCD modules.(2.8V)

The AAT3157 is a low noise, constant frequency charge pump DC/DC converter that uses a trimode load switch (1X), fractional (1.5X), and doubling (2X) conversion to maximize efficiency for white LED applications. The AAT3157 is capable of driving up to three channels of LEDs at 20mA per channel from a 2.7V to 5.5V input.

The current sinks may be operated individually or in parallel for driving higher current LEDs. A low external parts count (two 1 μ F flying capacitors and two small 1 μ F capacitors at VIN and VOUT) make this part ideally suited for small, battery-powered applications. AnalogicTech's S2Cwire™ (Simple Serial Control™) serial digital input is used to enable, disable, and set current for each LED with 16 settings down to 50 μ A.

The low-current mode supply current can be as low as 50 μ A to save power.

Data	Output (mA/Ch)	Data	Output (mA/Ch)
1	20.0	9	5.0
2	17.0	10	4.2
3	14.0	11	3.4
4	12.0	12	2.8
5	10.0	13	1.0
6	8.6	14	0.5
7	7.0	15	0.1
8	6.0	16	0.05

Figure 3-5-3. Charge pump Output Current

3. TECHNICAL BRIEF

3.6 SIM Card Interface

SIM_CONNECTOR

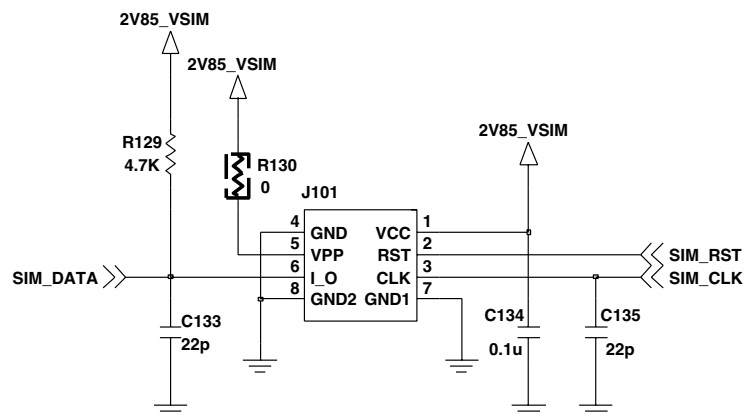


Figure 3-6. SIM CARD Interface

The EGoldVoice provides SIM Interface Module. The AD6527 checks status Periodically During established call mode whether SIM card is inserted or not, but it doesn't check during deep sleep mode. In order to communicate with SIM card, 3 signals SIM_DATA, SIM_CLK, SIM_RST.

Signals	Description
SIM_RST	This signal makes SIM card to HW default status.
SIM_CLK	This signal is transferred to SIM card.
SIM_DATA	This signal is interface datum.

3.7 KEYPAD Interface

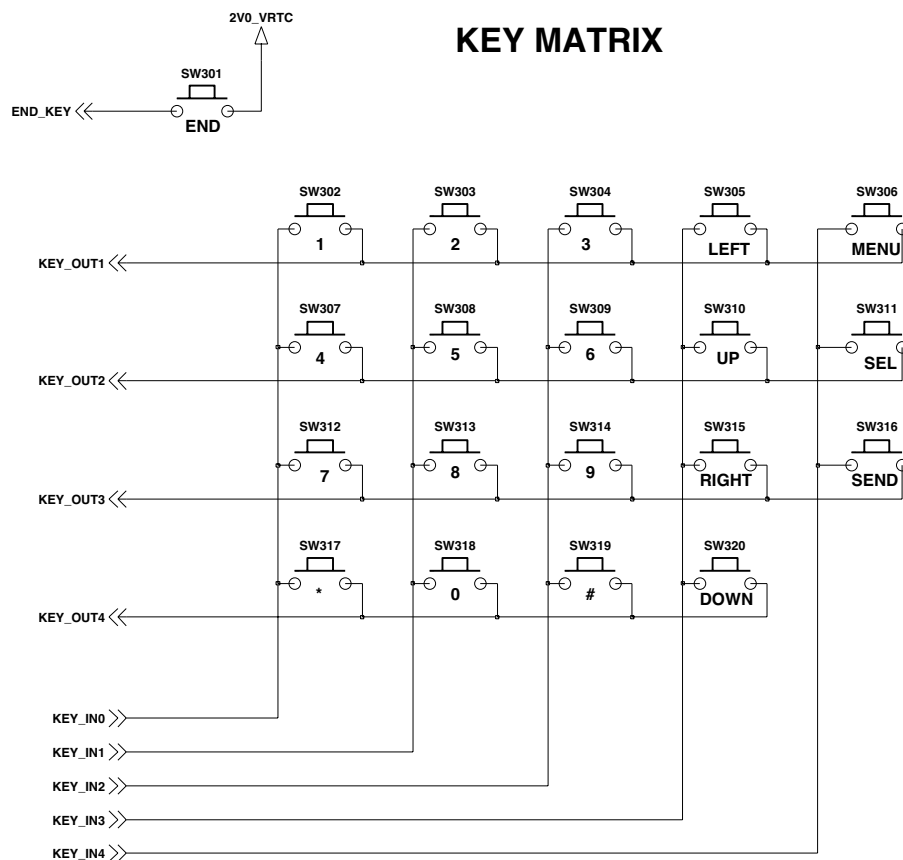


Figure 3-7 KEY MAXTRIX Interface

The keypad interface is connected to the X-Bus, together with the XBIU and the Shared Memory Register, using a single Bus Interface.

The keypad supports two scan modes:

- By default, the keypad is a 4x6 scan matrix (4 input and 6 output pins).
- To set the keypad to a 5x5 scan matrix (5 input and 5 output pins)

The scan mode should be determined at the very beginning of the system start because changes are not allowed later.

3. TECHNICAL BRIEF

3.8 Battery Charging Block Interface

CHARGING IC

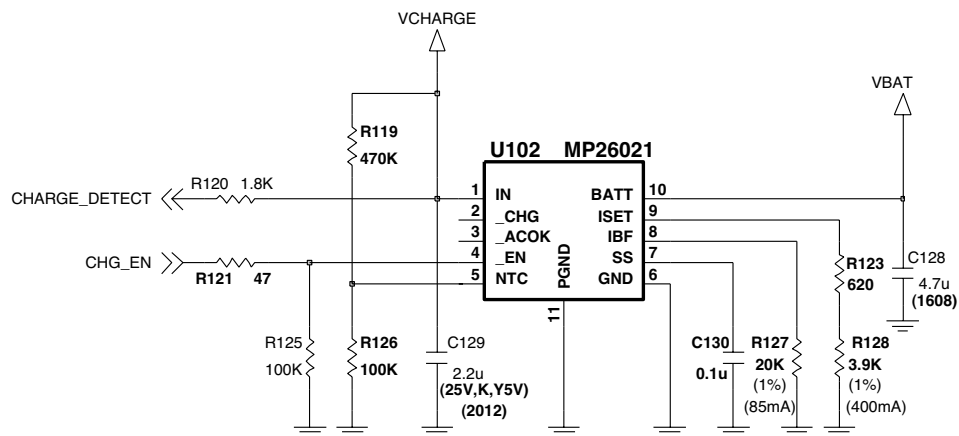


Figure 3-8. Charging IC Interface

The MP26021 is a linear, high-performance single cell Li-Ion battery charger. By integrating high voltage input protection into the charger IC, the MP26021 can Tolerate an input surge up to 28V

The device features constant current (CC) and constant voltage (CV) charging modes with programmable charge currents(85mA to 1A), programmable battery full threshold, thermal protection, battery temperature monitoring, reverse current blocking and trickle charge. The device also provides AC adapter power good and Charge status indications to the system.

MP26021 is available in a 10-pin 3mm x 3mm QFN package.

3.9 RF Interface

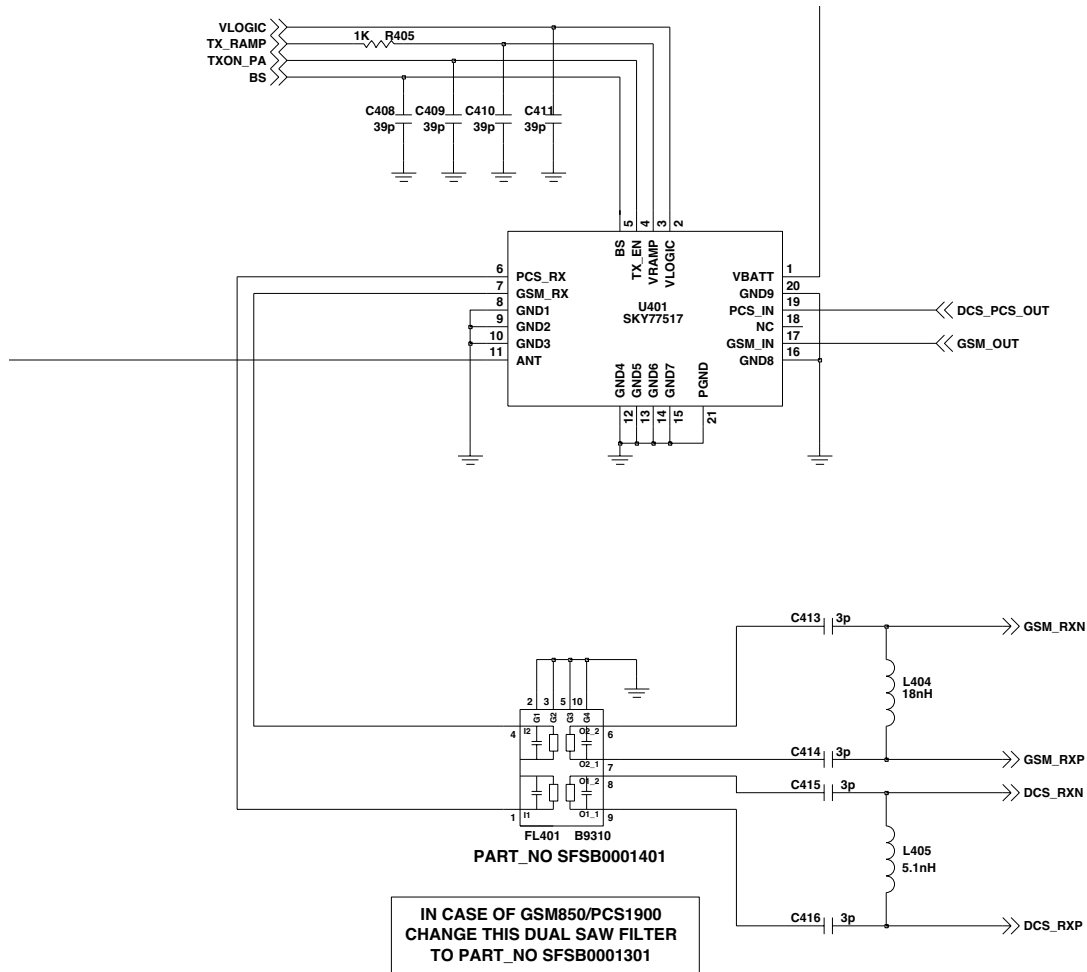


Figure 3-9-2. RF Module /SAW Filter interface

E-GOLDvoice features a fully integrated constant-gain direct conversion receiver, i.e. there is no interstage filter needed and the baseband level at the analogue IQinterface follows directly the RF input level. Depending on the baseband ADC dynamic range, single- or multiple-step gain switching schemes are possible.

An integrated, selfaligning, low-pass filter ensures the receivers to function under blocking and reference interference conditions and avoids aliasing by baseband sampling. An automatic DC-offset compensation is implemented and can be switched depending on the gain setting.

3. TECHNICAL BRIEF

The digital transmitter architecture is based on a fractional-N sigma-delta synthesizer for constant envelope GMSK modulation. This configuration allows a very low power design with a reduced external component count.

The modulation is transferred between baseband- and RF-part of the PMB7880 via a digital interface signal into the digital modulator. The following Gaussian filter shapes the digital data stream for the GMSK modulation. Additionally a pre-distortion filter compensates the attenuation of the PLL transfer function resulting in a very low distortion at the transmit output.

The filtered digital data stream is scaled appropriately and added to the channel word.

This sum is fed into the MASH modulator. The output of the MASH modulator is a sequence of integer divider values representing the high resolution fractional input signal. This sequence controls the MMD (multi modulus divider) at a sample rate of 26MHz. Thus a tightly controlled frequency modulation of the VCO is achieved.

3.10 Audio Interface

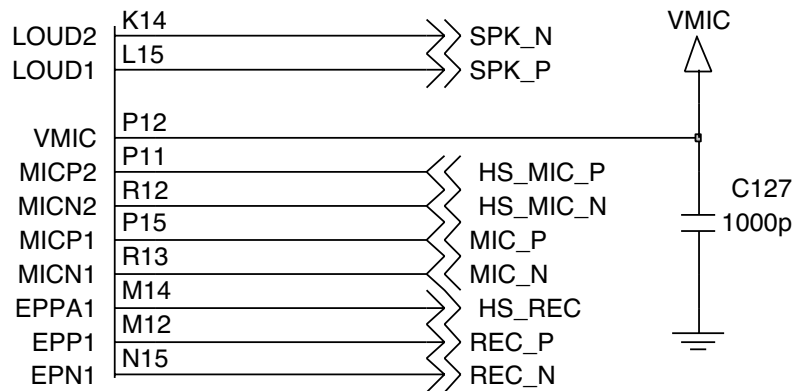


Figure 3-10-1 Audio interface

The audio front-end of E-GOLDvoice offers the digital and analog circuit blocks for both receive and transmit audio operation and ringing. It features a high-quality, digital-to-analog path with amplifying stages for connecting acoustic transducers to the E-GOLDvoice. In the transmit direction the supply voltage generation for microphones, low-noise amplifier and analog to digital conversion are integrated on the E-GOLDvoice.

For E-GOLDvoice the EPP1/EPN1 driver are used as differential Earpiece-Driver, EPPa1 is used as single-ended Headset-Driver.

The audio front-end itself can be considered to be organized in three sub-blocks:

- Interface to processor cores (TEAKlite and - indirectly - C166S)
- Digital filters
- Analog part.

3. TECHNICAL BRIEF

The interface to the processor cores consists of a direct physical connection to the TEAKlite DSP bus and a set of firmware commands to handle communication between the C166S and the audio front-end which serves as the interface peripheral for audio algorithms running on the DSP or the controller. The audio front-end Generates interrupts on certain occasions, for example, when exchange of data is requested. The core interface part of the audio front-end also contains the control and status registers which are used to set up certain operation modes of the peripheral.

The section next to the core interface contains the digital filters for interpolation and decimation of the audio signals being received and transmitted. The data path for the receive direction can be set up to process sampling rates between 8kHz and 48kHz.

The interpolation filters for the respective sampling rates are implemented in a dedicated hardware block and are automatically selected to suite the chosen sampling rate. Low-pass interpolation filtering, which produces an unsigned 16-bit data stream with a sampling rate of 4 MHz, is performed digitally. D-to-A conversion, postfiltering, and final amplification are performed on the analog part. The amplifier buffer for voiceband receive does also support ringer functionality. The ringer functionality is activated by Setting bits RINGSELPN or RINGSELPA in the voiceband part of the analog control register.

In transmit direction, amplification, prefiltering and A-to-D conversion (analog $\Sigma \Delta$ modulation) are performed on the analog part. The resulting 2-Mbit/s data stream is filtered by a digital low-pass decimation filter for further processing by DSP firmware.

Two sampling rates, 8kHz and 16kHz, are supported. The analog section contains all the necessary analog functional blocks including microphone supply generation, output and input amplifiers and analog filtering.

Signals	Description
EPp1	Main Receiver Positive signal(Differential signal)
EPn1	Main Receiver Negative signal(Differential signal)
EPpa1	Headset signal(Single Ended signal)
Loud1	Speaker Output Positive signal(Differential signal)
Loud2	Speaker Output Negative signal(Differential signal)
MICP1	Main Microphone Positive signal(Differential signal)
MICN1	Main Microphone Negative signal(Differential signal)
MICP2	Headset Microphone Positive signal(Differential signal)
MICN2	Headset Microphone Negative signal(Differential signal)
VMIC	Main/Headset Microphone supply power

SPEAKER & RECEIVER

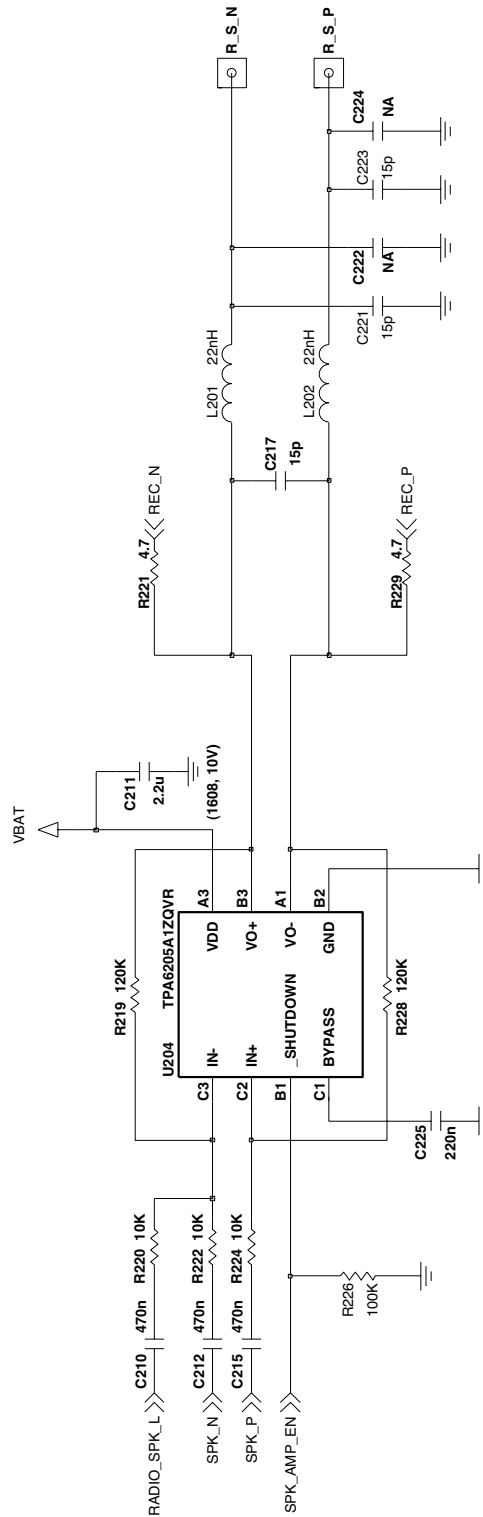


Figure 3-10-2 Main Speaker(Receiver) interface

3. TECHNICAL BRIEF

MAIN_MIC

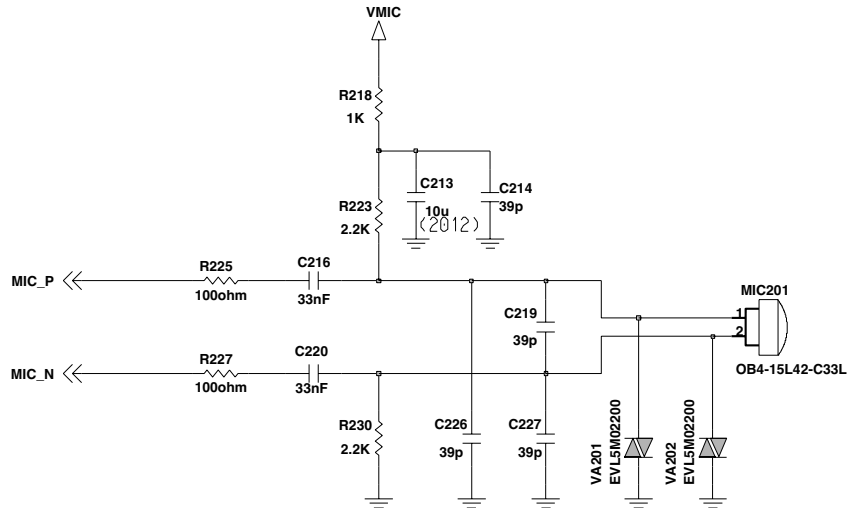


Figure 3-10-4 Main Microphone interface

EAR_MIC I/O CONNECTOR

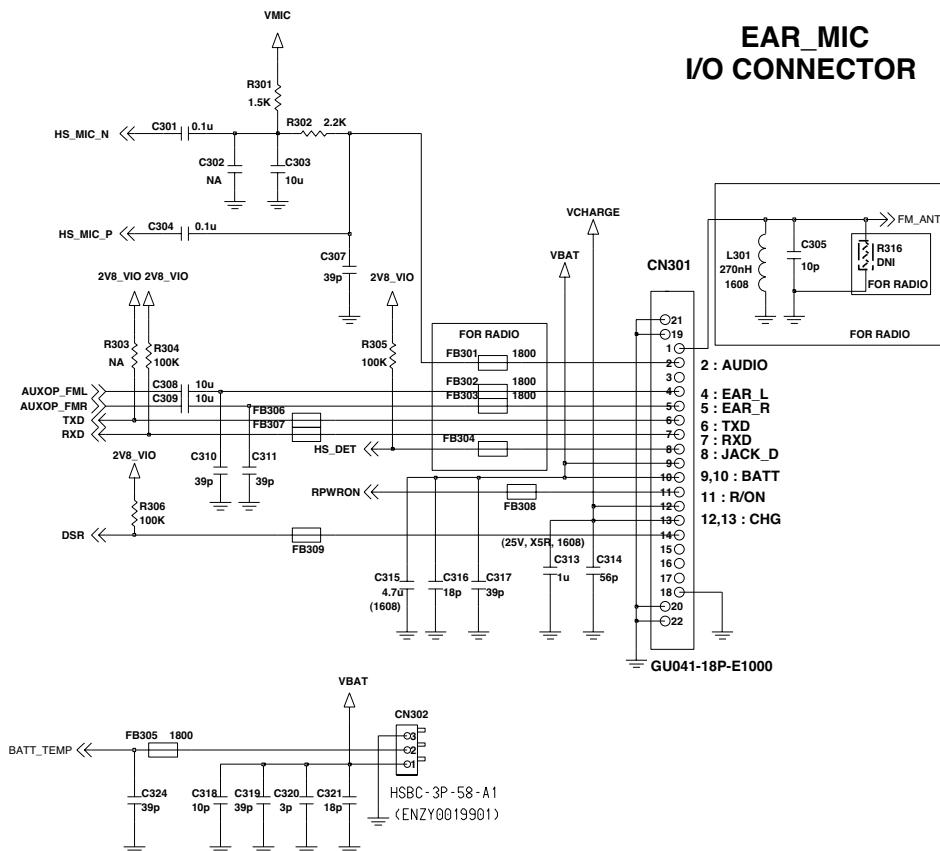


Figure 3-10-5 Headset interface

3.11 Key LED Interface

KEY BACKLIGHT

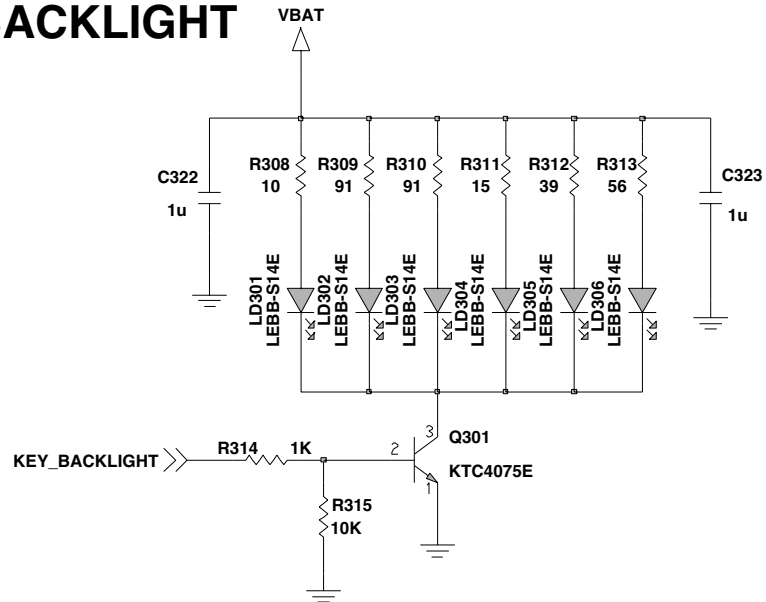


Figure 3-11 Key LED interface

This handset has 6 LEDs that illuminates blue color.

Control signal is controlled by EGold-voice with PWM and handset has 3 methods, ON, OFF and Dimming.

3. TECHNICAL BRIEF

3.12 Vibrator Interface

VIBRATOR

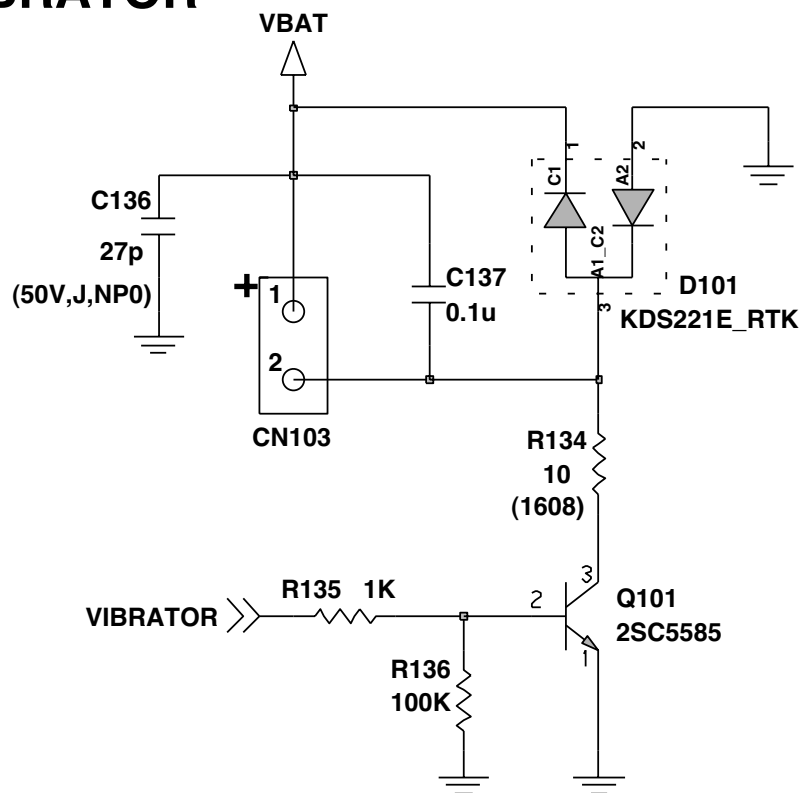


Figure 3-12 Vibrator interface

This handset has vibrator operation. Control signal is controlled by EGold-voice with PWM.

3.13 Memory Interface

MEMORY

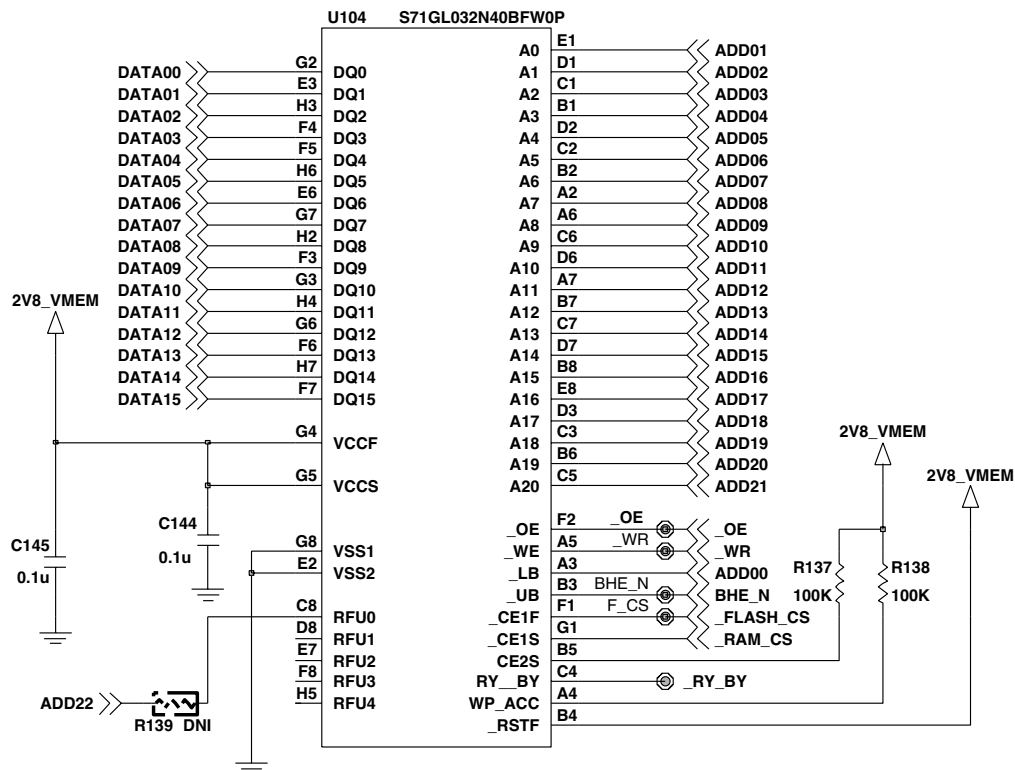


Figure 3-13 Memory interface

In E-GOLDvoice, the 16bits demultiplex X-bus interface is used for memory device support. NOR Flash memory is supported. (The NAND Flash memory is not supported). The page mode can be supported for flash memories. Up to 8MBytes of external RAM and/or ROM can be connected to the MCU via its external bus interface.

Up to 3 external CS signals can be generated to save external glue logic. Access to very slow memories is supported via a special 'Ready' function. The system MCU clock is set to run with 26Mhz.

3. TECHNICAL BRIEF

3.14 Power Block Interface

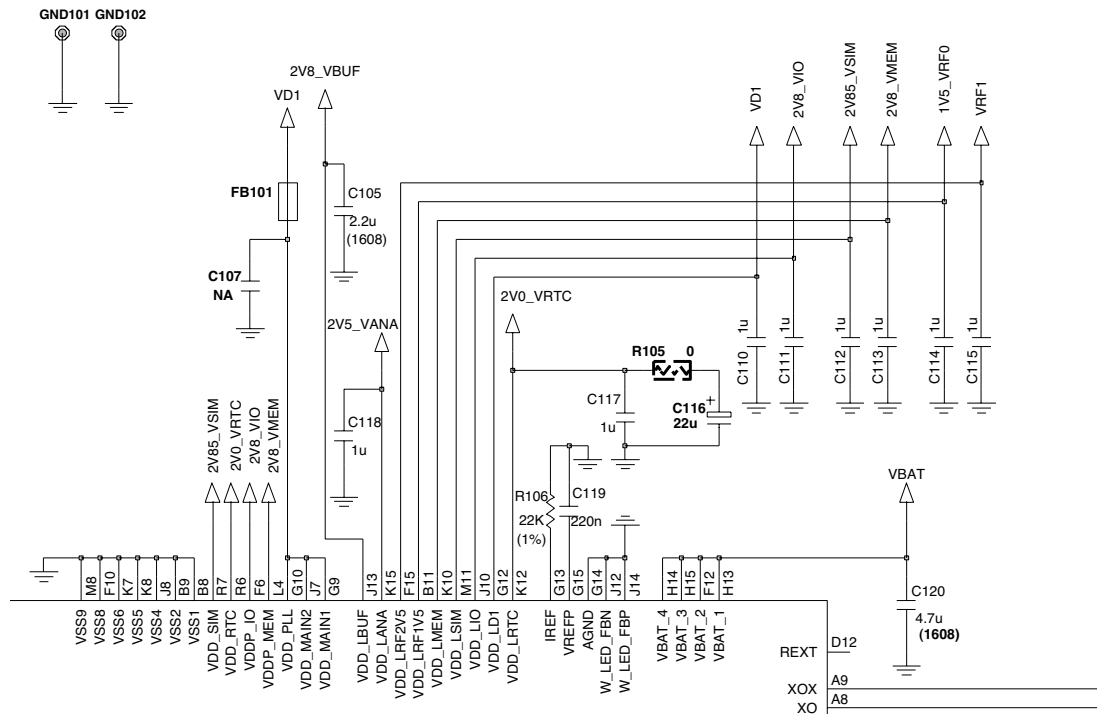


Figure 3-14-1 Power Block interface

The E-GOLDvoice integrated power management unit (PMU) supports direct connection to battery (DCB). That means all supply voltages needed are generated on-chip with integrated linear voltage regulators. The input of these linear voltage regulators is the battery voltage. The external memory and SIM card supply is provided by the on-chip voltage regulators. Table 144 is an overview of the internal generated supply voltages.

The integrated power management also provides the control state machine for system start up, including start up with discharged batteries, trickle charging and system reset control. After system start up several methods are implemented for active and idle power saving.

Name	Output Voltage(V)	Output Current (mA)	Comment
LRTC	2.0	4	Used for the real time and digital PMU supply
LD1	1.2/1.5	150	Used for the core supplies (MCU and DSP via switch)
LIO	1.8/2.85	30	Used for the I/O pad supply and, for example, the display
LRFXO	2.5	10	Used for the crystal oscillator supply
LMEM	1.8/2.85	100	Used for the external memory supply, voltage can be configured during startup
LANA	2.5	100	Used for analog (audio and baseband processing) and headset driver
LSIM	1.8/2.85	30	Used of the SIM card supply
LBUF	2.6/2.8/3.0/3.2	300	Used for the loudspeaker and earpiece driver
LRFRX	2.5	100	Used for the RF RX part
LRFTRX	1.5	120	Used for the RF TX/TX part

Figure 3-14-2 EGold Voice PMU

LDO output voltage selection

- LD1, LIO, LSIM, LBUF output voltage programmable by software.
- LMEM output voltage is selectable by pin configuration upon startup.

Active and idle power saving options:

- The flexible clock switching options allow minimizing the power consumption during the operation phases of the E-GOLDvoice.
- Current consumption during the standby mode is minimized by reducing the clock to 32 kHz and switching it off for most of the device. In addition, the power supply for the TEAKLite ROM is switched off and the controller RAM is switched to a power saving mode.

Start-up and Reset Control State Machine Features

- Power up upon battery insertion, push button, alarm, charger connection.
- Detection of battery exchange or re-insertion.
- Complete start-up sequence management.
- System turn-on, system turn-off operation management including emergency (under-voltage) and programmed shutdown functions.
- Internal reset of the baseband, including silent reset.
- Tri-state function of the baseband module.
- Standby mode controlled by VCXO_EN provided by SCCU module.



3.15.1 FM Tunner

The Si4702 patented digital low-IF architecture reduces external components and eliminates the need for factory adjustments. The receive (RX) section integrates a low noise amplifier (LNA) supporting the worldwide FM broadcast band (76 to 108 MHz). An automatic gain control (AGC) circuit controls the gain of the LNA to optimize sensitivity and rejection of strong interferers.

For two-wire operation, a transfer begins with the START condition. The control word is latched internally on rising SCLK edges and is eight bits in length, comprised of a seven bit device address equal to 0010000b and a read/write bit (write = 0 and read = 1). The device acknowledges the address by setting SDIO low on the next falling SCLK edge. For write operations, the device acknowledge is followed by an eight bit data word latched internally on rising edges of SCLK.

The device always acknowledges the data by setting SDIO low on the next falling SCLK edge. An internal address counter automatically increments to allow continuous data byte writes, starting with the upper byte of register 02h, followed by the lower byte of register 02h, and onward until the lower byte of the last register is reached. The internal address counter then automatically wraps around to the upper byte of register 00h and proceeds from there until continuous writes cease. Data transfer ceases with the STOP command. After every STOP Command, The internal address counter is reset.

For read operations, the device acknowledge is followed by an eight bit data word shifted out on falling SCLK edges. An internal address counter automatically increments to allow continuous data byte reads, starting with the upper byte of register 0Ah, followed by the lower byte of register 0Ah, and onward until the lower byte of the last register is reached. The internal address counter then automatically wraps around to the upper byte of register 00h and proceeds from there until continuous reads cease. After each byte of data is read, the controller IC should return an acknowledge if an additional byte of data will be requested. Data transfer ceases with the STOP command. After every STOP command, the internal address counter is reset.

3.15.2 Headphone Amplifier

The LM4809 is a dual audio power amplifier capable of delivering 105mW per channel of continuous average power into a 16Ω load with 0.1% (THD+N) from a 5V power supply.

Boomer audio power amplifiers were designed specifically to provide high quality output power with a minimal amount of external components. Since the LM4809 does not require bootstrap capacitors or snubber networks, it is optimally suited for low-power portable systems.

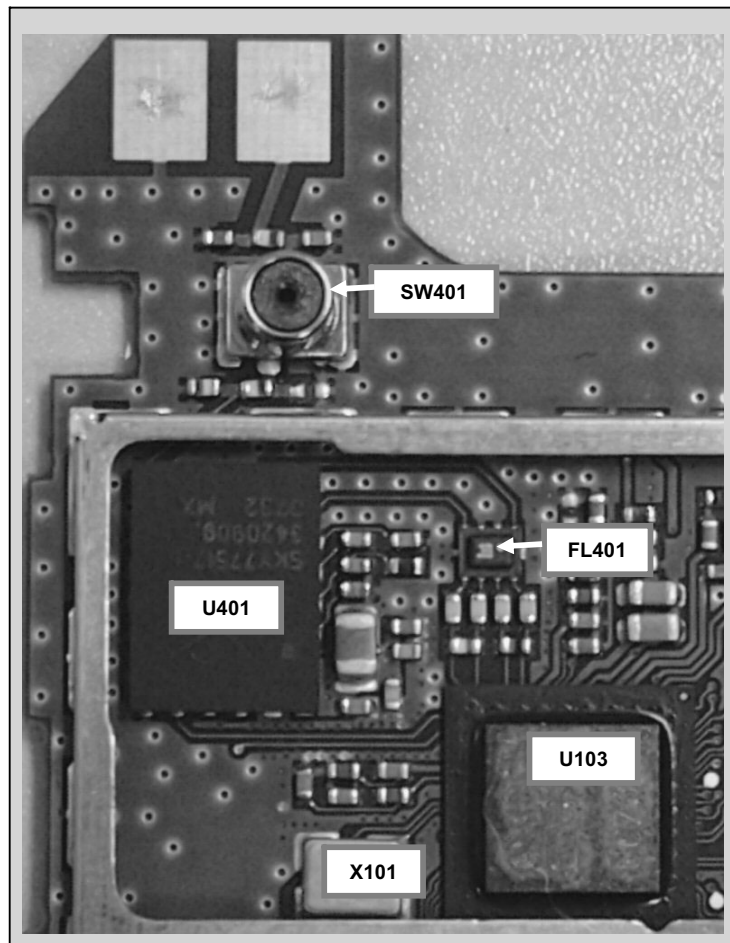
The unity-gain stable LM4809 can be configured by external gain-setting resistors.

The LM4809 features an externally controlled, active-low, micropower consumption shutdown mode, as well as an internal thermal shutdown protection mechanism.

4. TROUBLE SHOOTING

4. TROUBLE SHOOTING

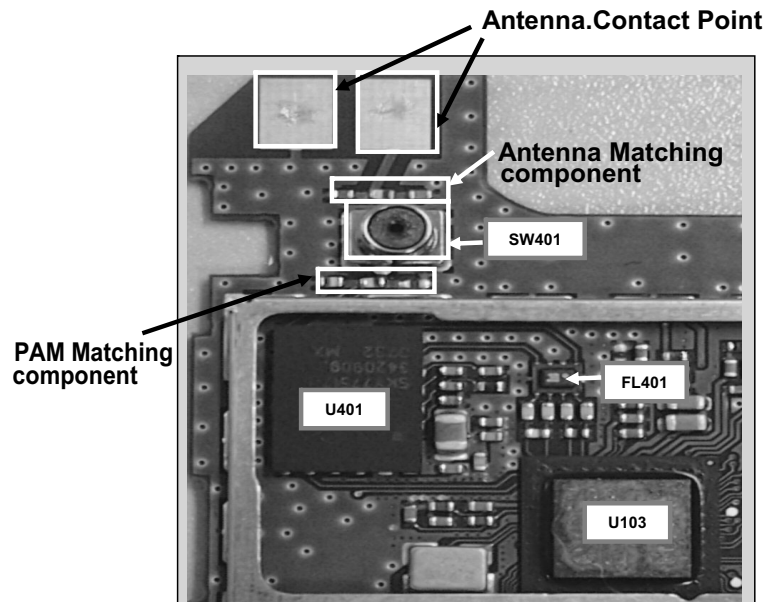
4.1 RF Trouble



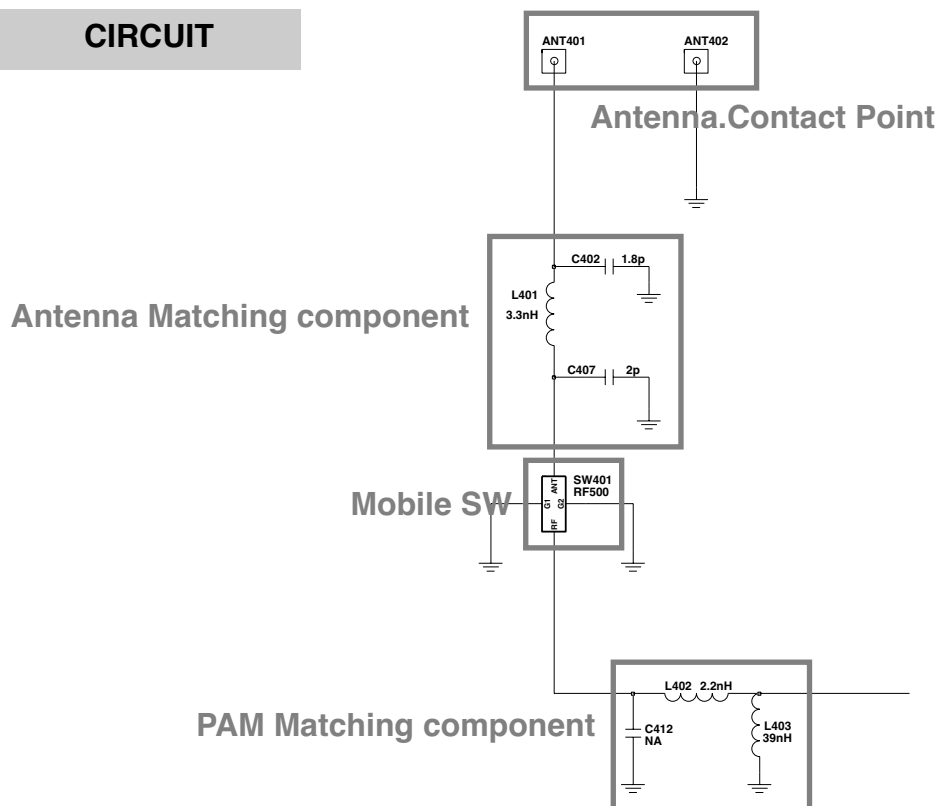
REFERENCE	PART Description
U401	PAM (Power Amp. Module+ASM)
X101	DCXO (26MHz)
SW401	Mobile Switch
FL401	RX SAW Filter

RF Trouble

TEST POINT

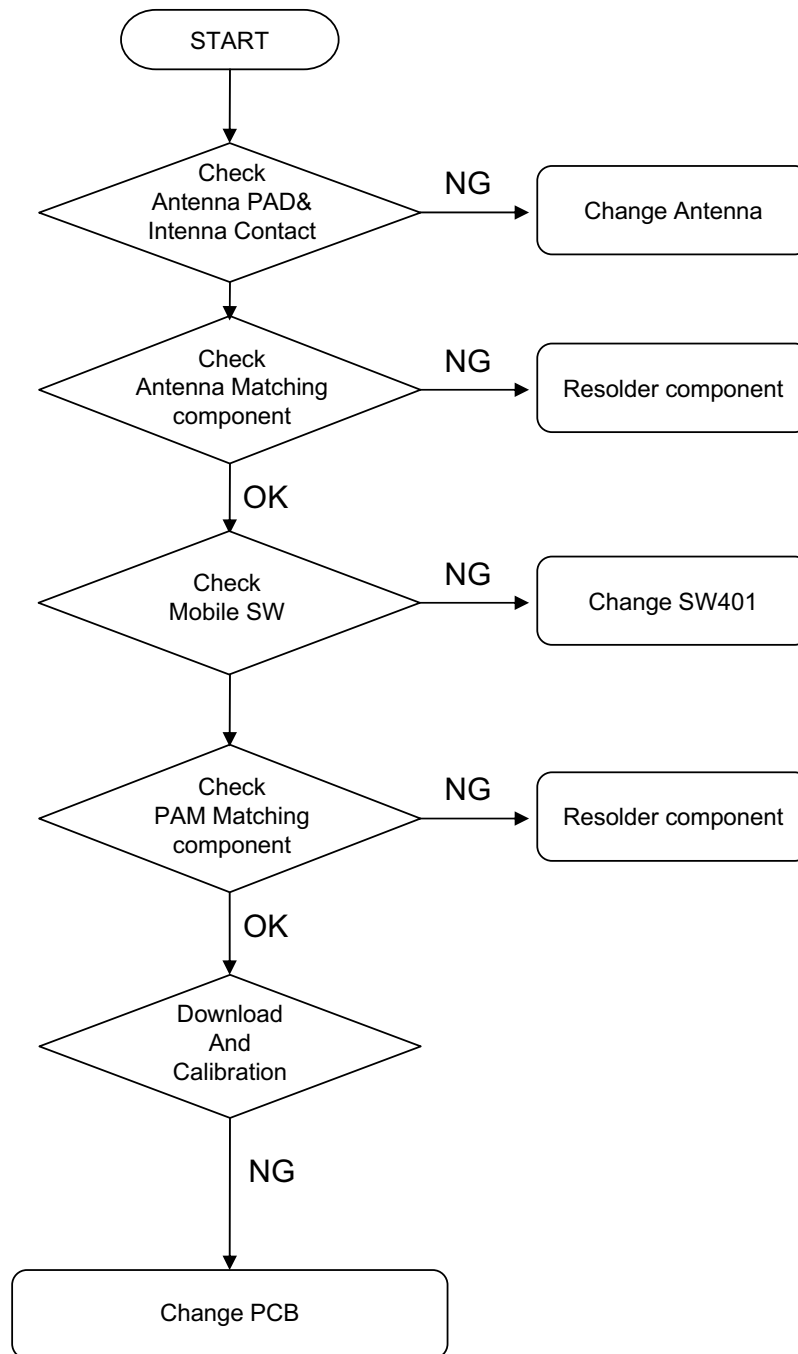


CIRCUIT



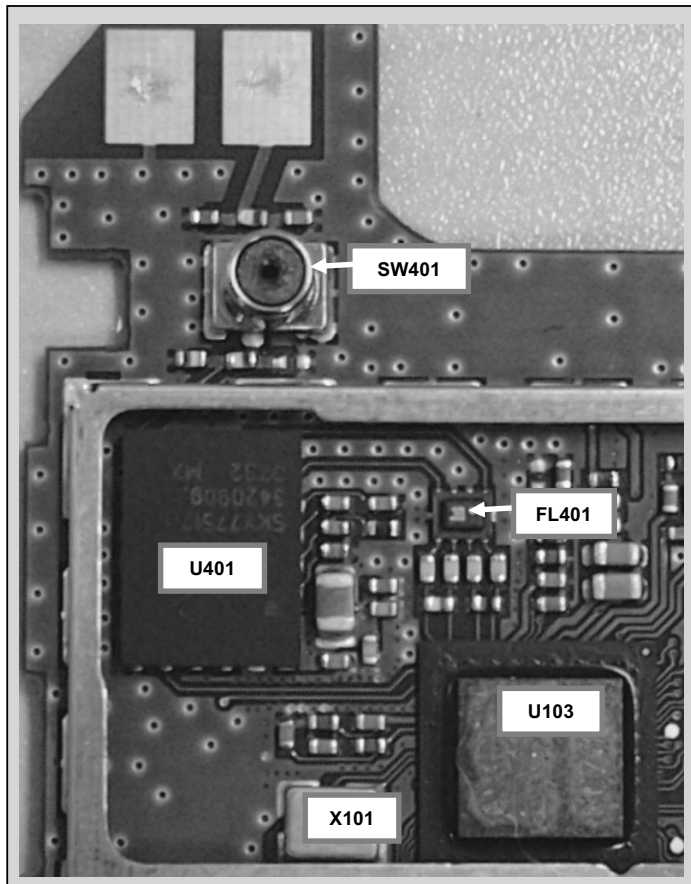
4. TROUBLE SHOOTING

CHECKING FLOW

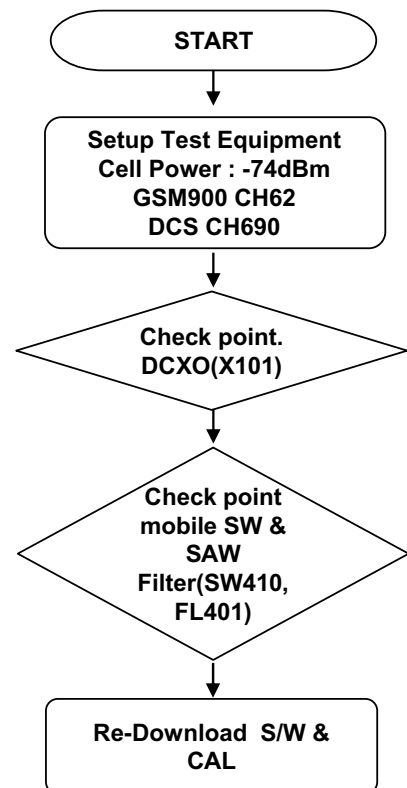


RX Trouble

TEST POINT



CHECKING FLOW

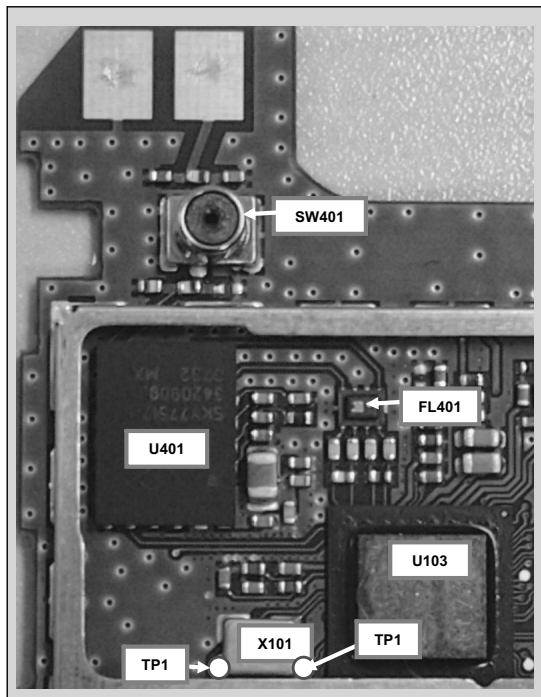


4. TROUBLE SHOOTING

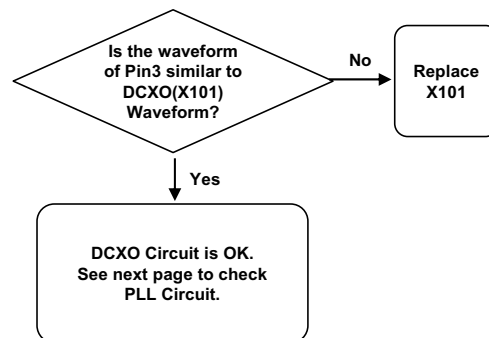
RX Trouble

(1) Checking VCTCXO Circuit

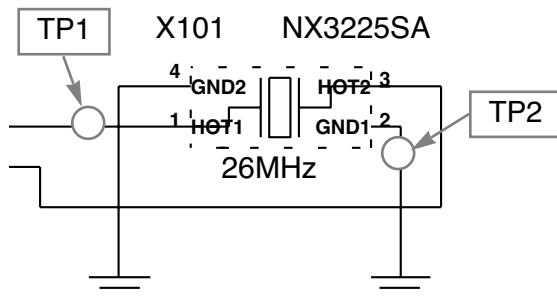
TEST POINT



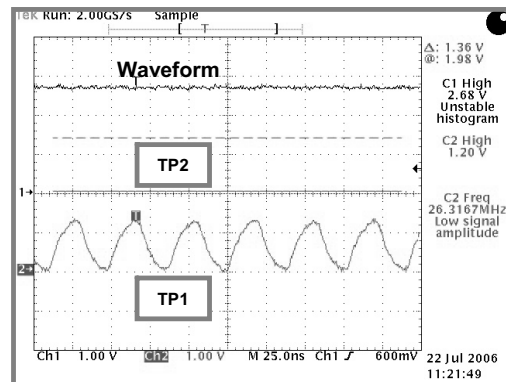
CHECKING FLOW



CIRCUIT



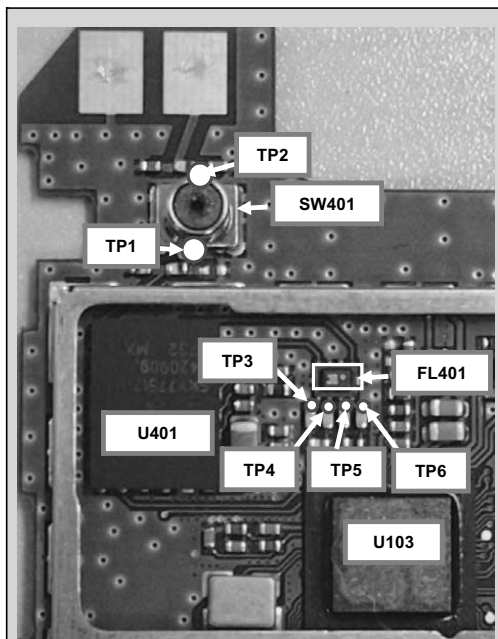
Waveform



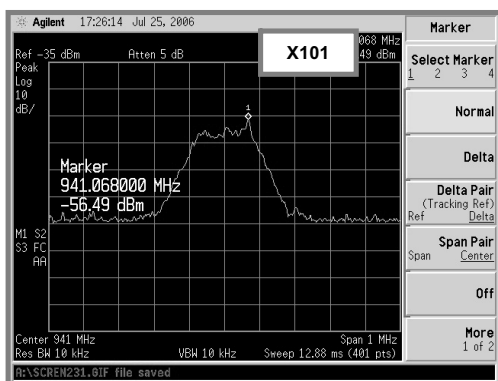
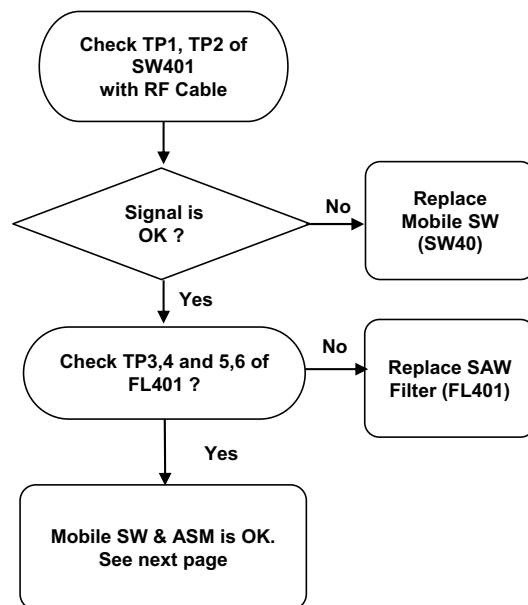
4. TROUBLE SHOOTING

RX Trouble

TEST POINT



CHECKING FLOW

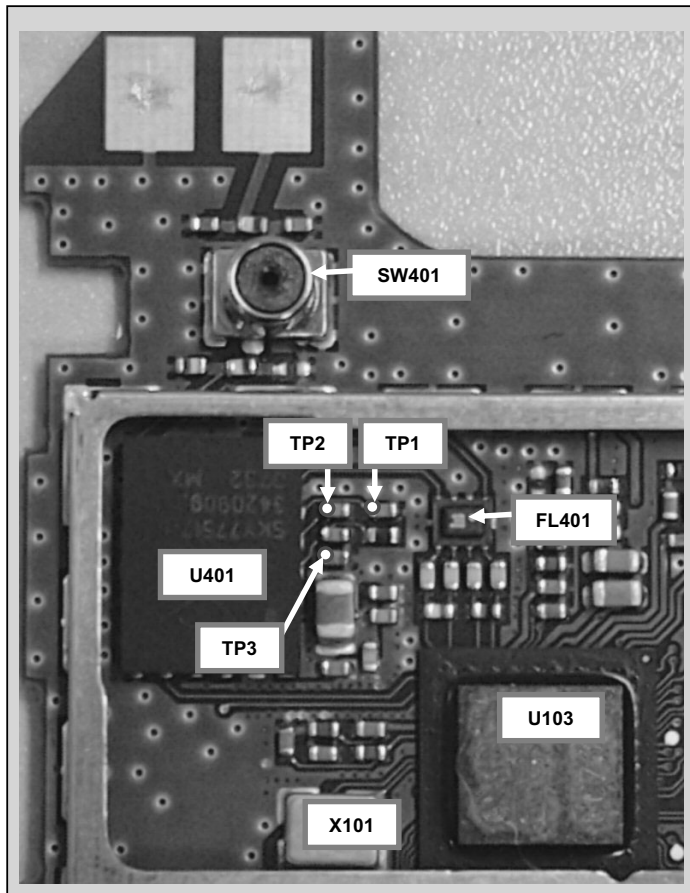


*** TP 3, 4 and 5, 6 outputs of FL401 are balanced**

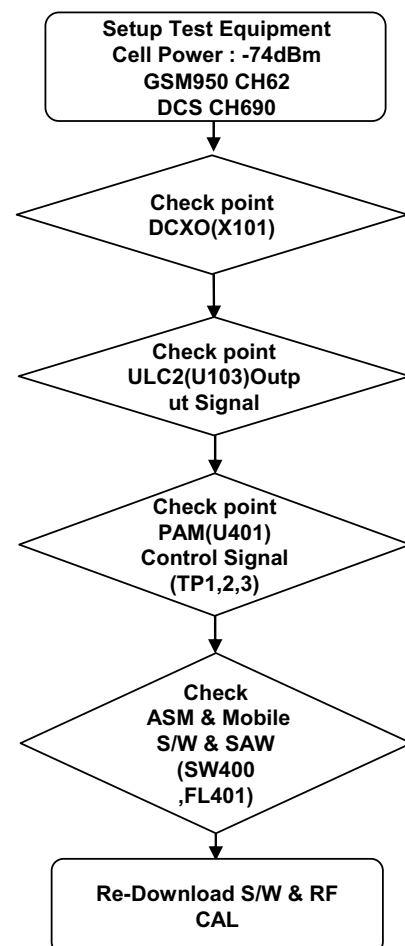
4. TROUBLE SHOOTING

4.2 TX Trouble

TEST POINT



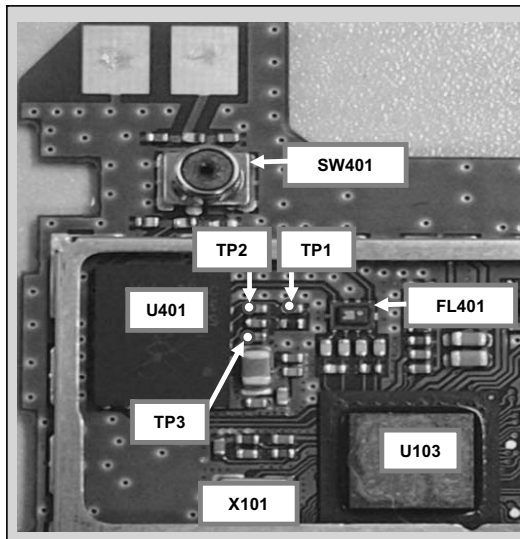
CHECKING FLOW



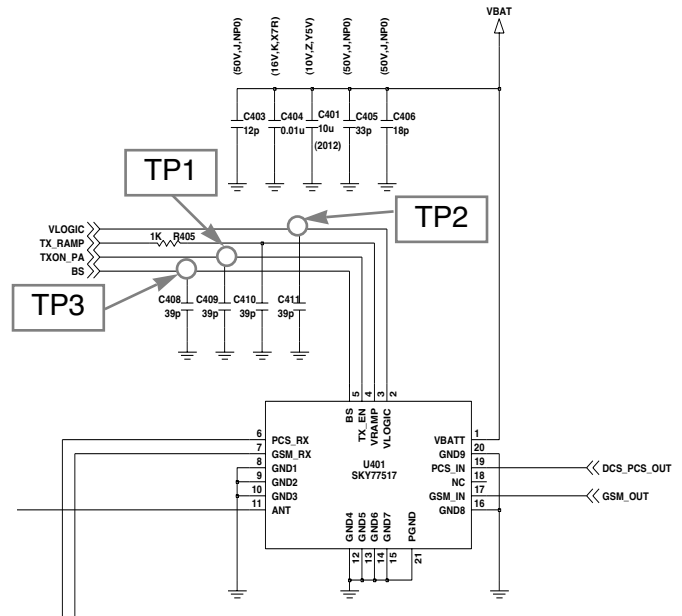
4. TROUBLE SHOOTING

TX Trouble

TEST POINT



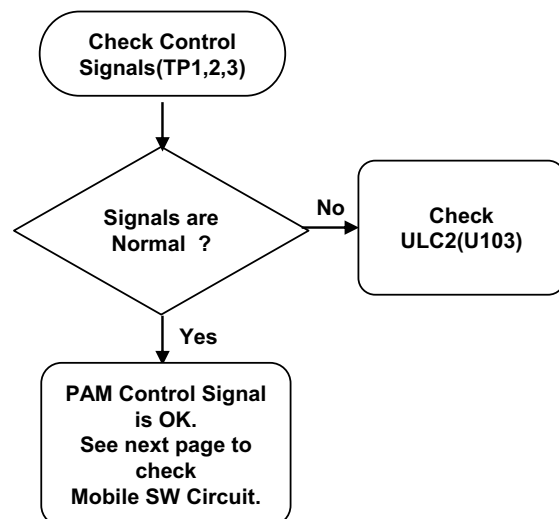
CIRCUIT



Signal configuration

Mode	GSM900 TX	DCS1800 TX
VLOGIC (TP1)	H(2.7V)	H(2.7V)
TXON_PA (TP2)	H(2.7V)	H(2.7V)
BS (TP3)	L	H(2.7V)

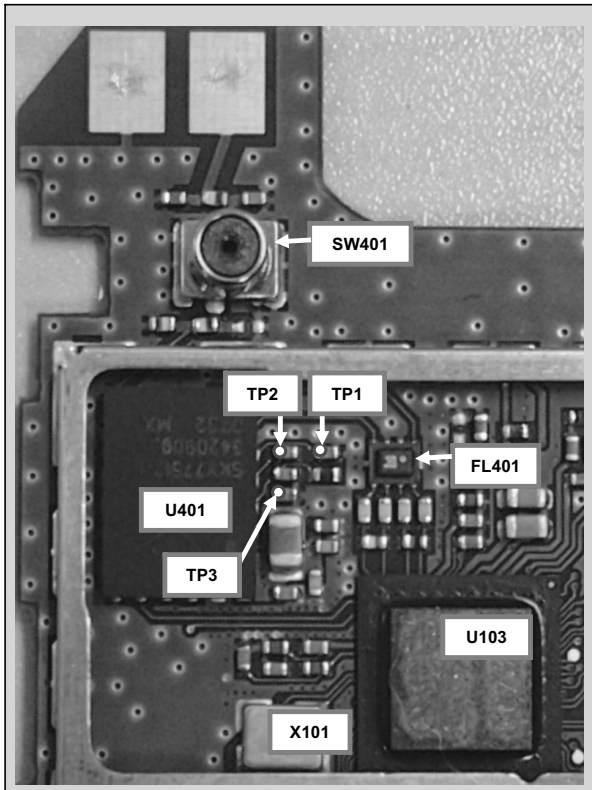
CHECKING FLOW



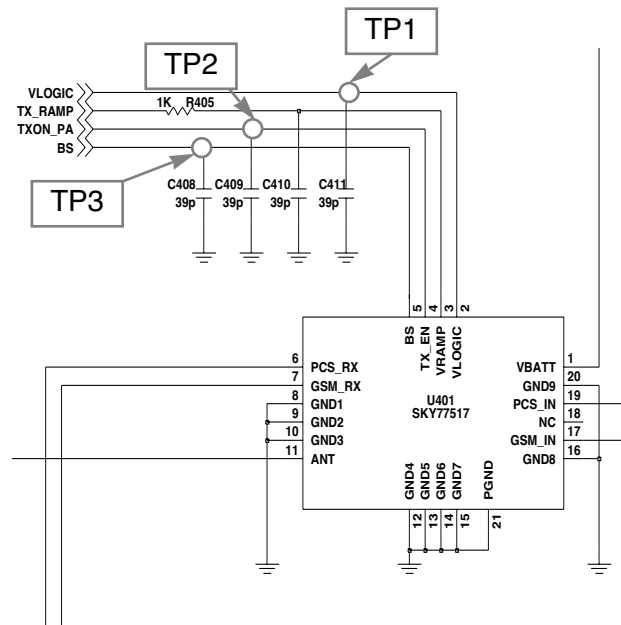
4. TROUBLE SHOOTING

TX Trouble

TEST POINT



CIRCUIT

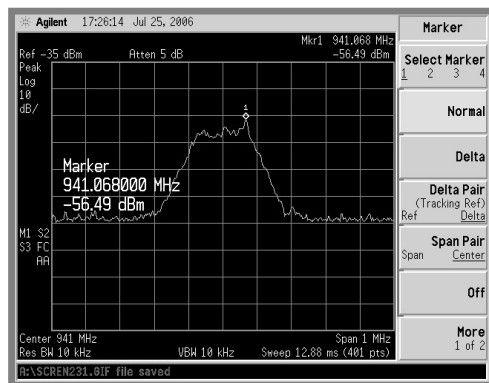
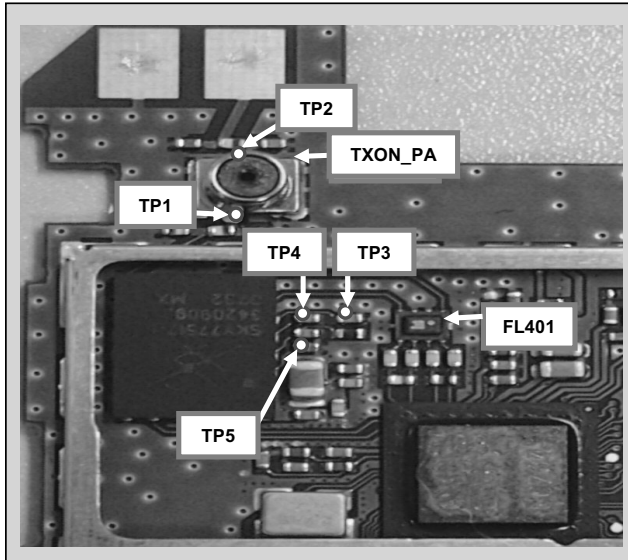


Mode	GSM900 TX	DCS1800 TX	GSM900 RX	DCS1800 RX
VLOGIC (TP1)	H(2.7V)	H(2.7V)	H(2.7V)	H(2.7V)
TXON_PA (TP2)	H(2.7V)	H(2.7V)	L	L
BS (TP3)	L	H(2.7V)	L	H(2.7V)

4. TROUBLE SHOOTING

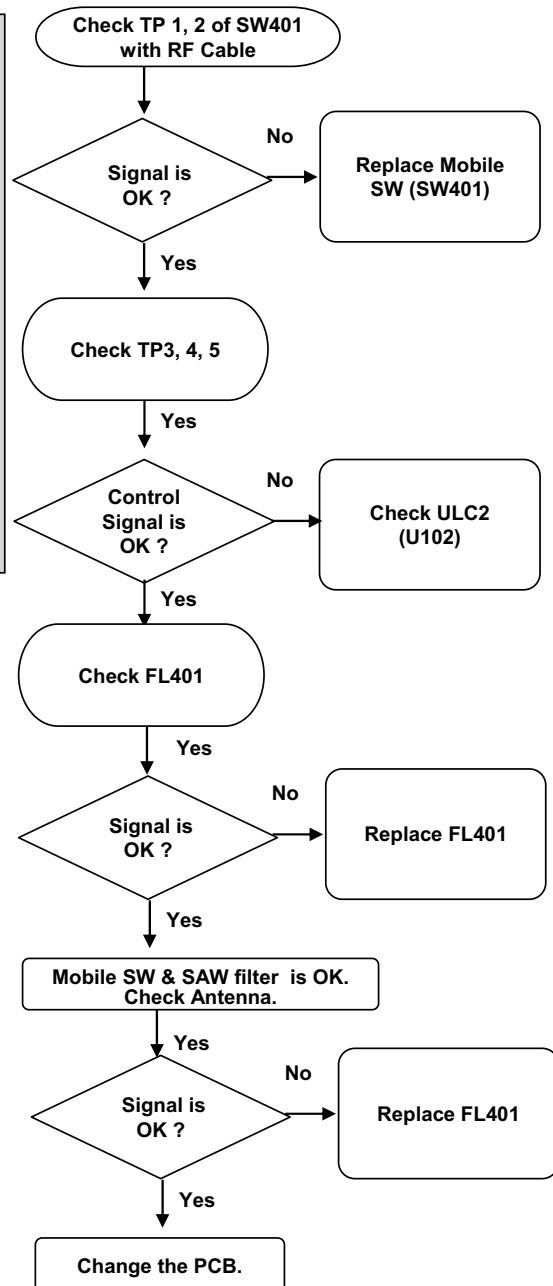
RX Trouble

TEST POINT



Mode	GSM900 RX	DCS1800 RX
VLOGIC (TP3)	H(2.7V)	H(2.7V)
TXON_PA (TP4)	L	L
BS(TP5)	L	H(2.7V)

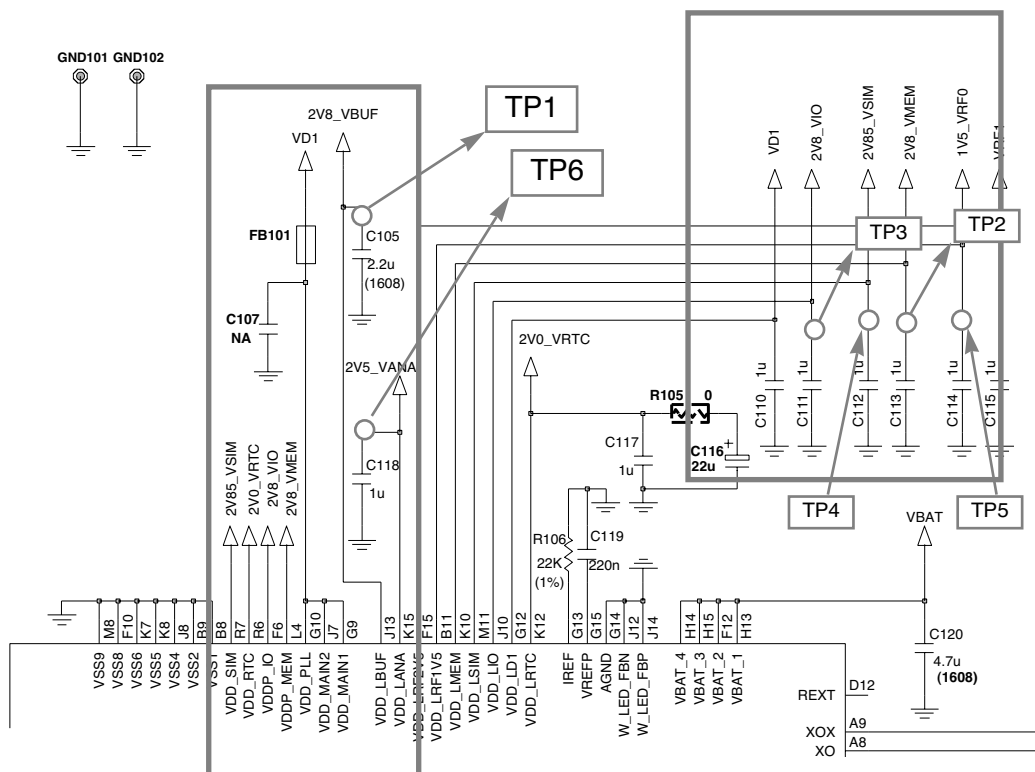
CHECKING FLOW



TEST POINT

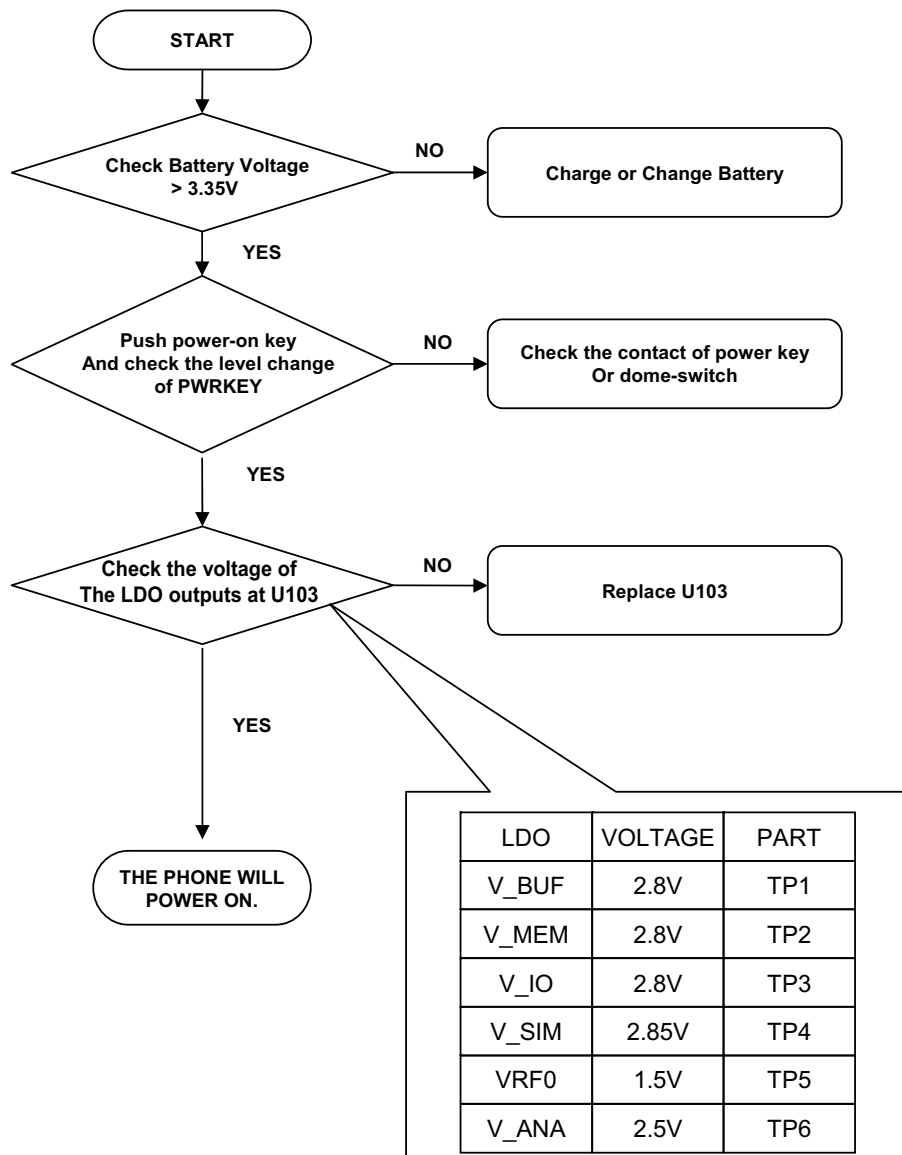
- Battery Voltage(Need to over 3.35V)
- Power-On Key detection (PWRON signal)
- Outputs of LDOs from EGV

CIRCUIT



Power On Trouble

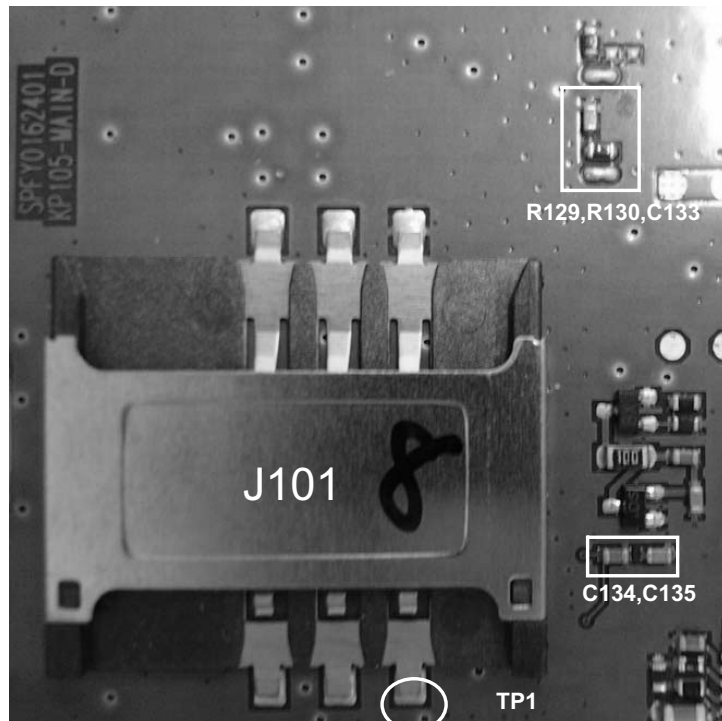
CHECKING FLOW



4. TROUBLE SHOOTING

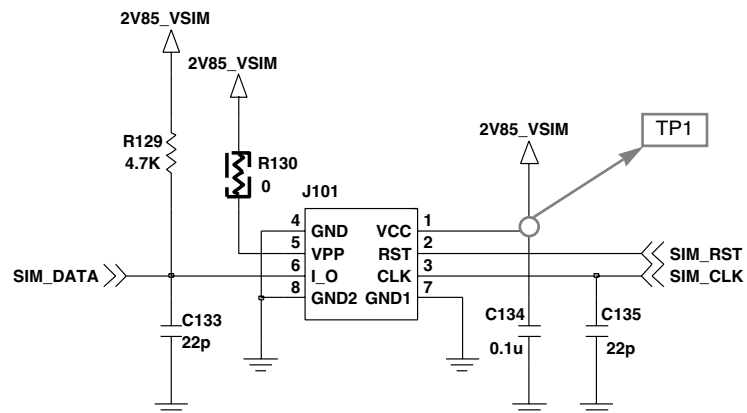
4.4. SIM Card Trouble

TEST POINT

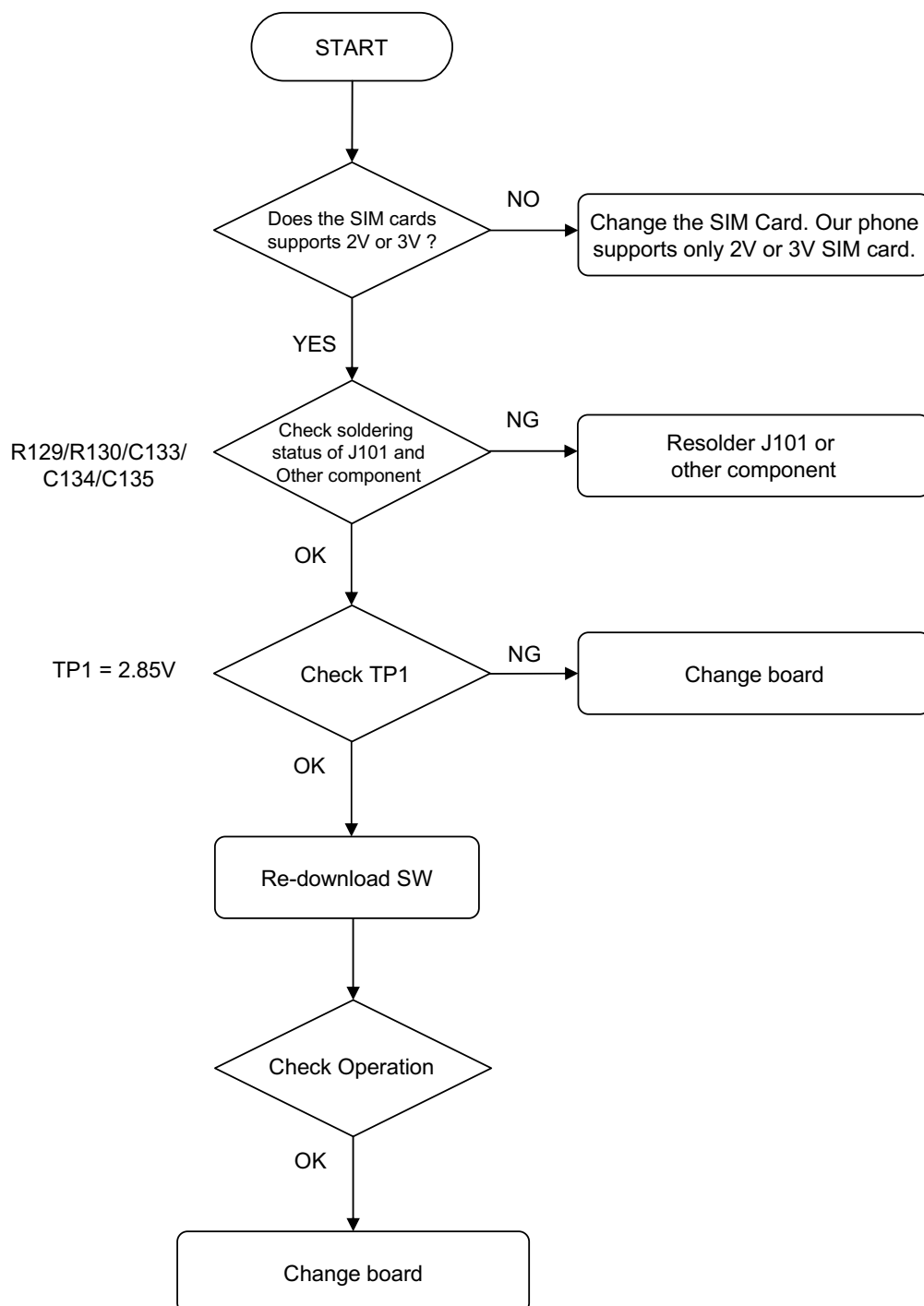


CIRCUIT DIAGRAM

SIM_CONNECTOR



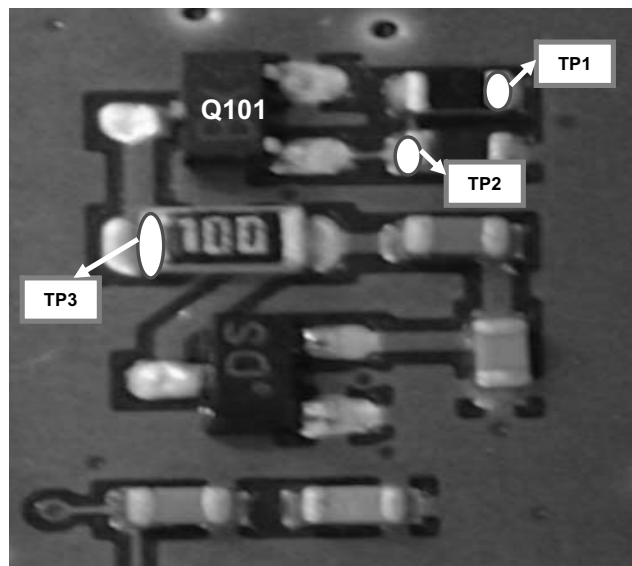
Checking Flow



4. TROUBLE SHOOTING

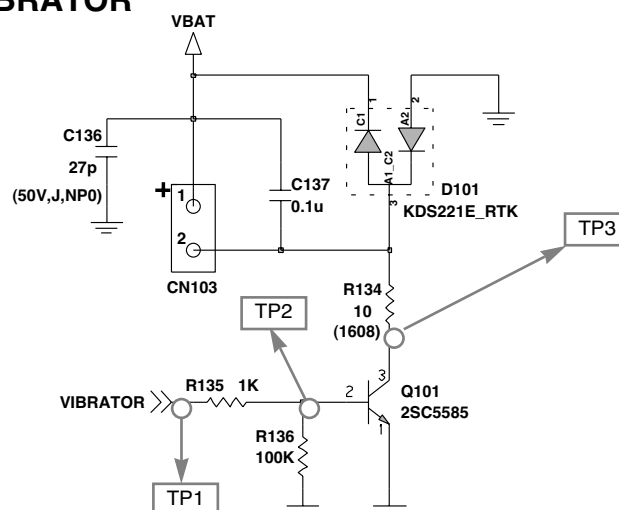
4.5. Vibrator Trouble

TEST POINT

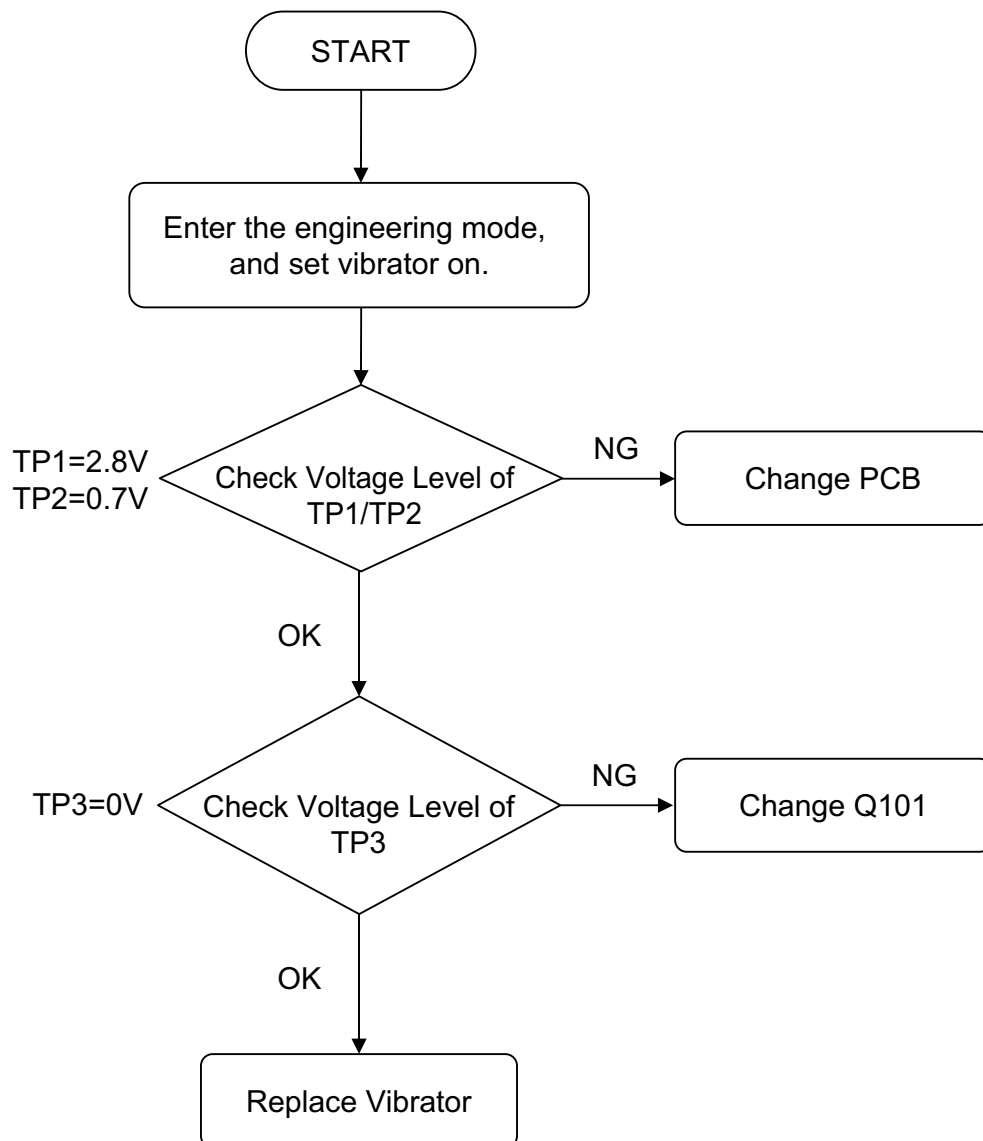


CIRCUIT DIAGRAM

VIBRATOR



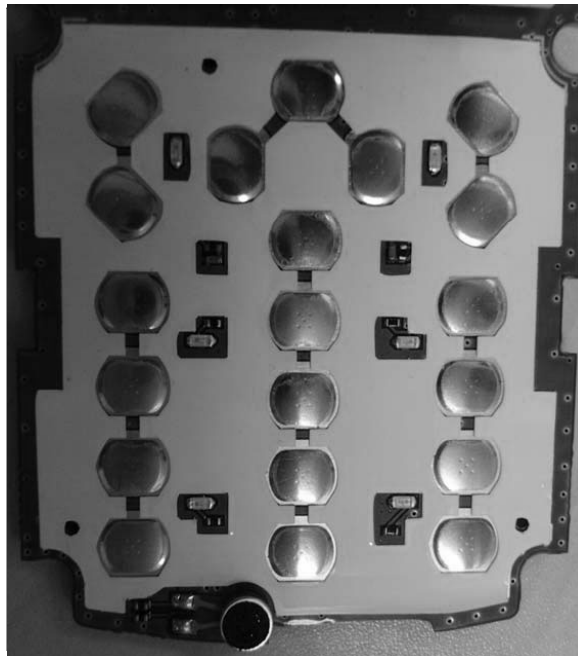
Checking Flow



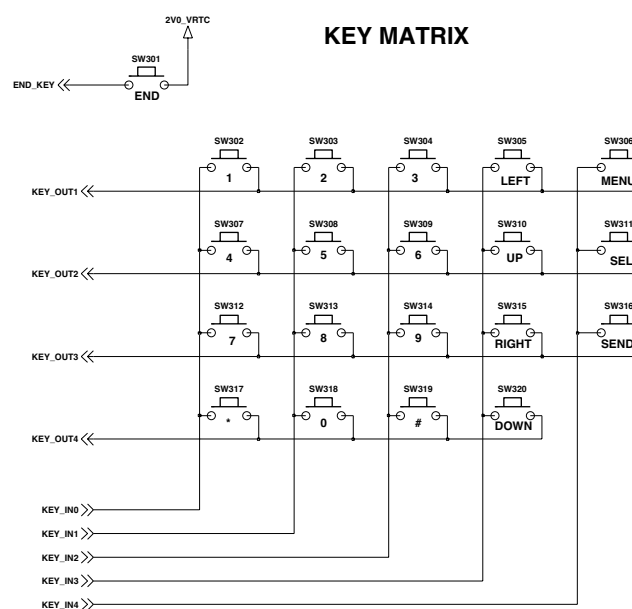
4. TROUBLE SHOOTING

4.6. Keypad Trouble

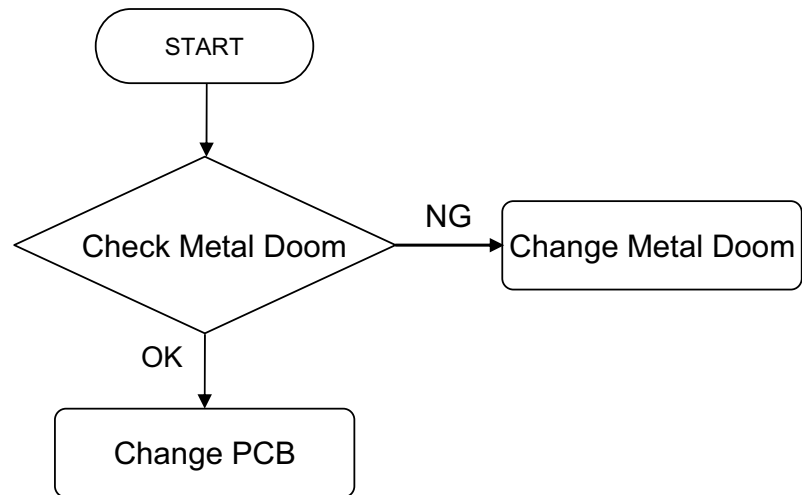
TEST POINT



CIRCUIT DIAGRAM



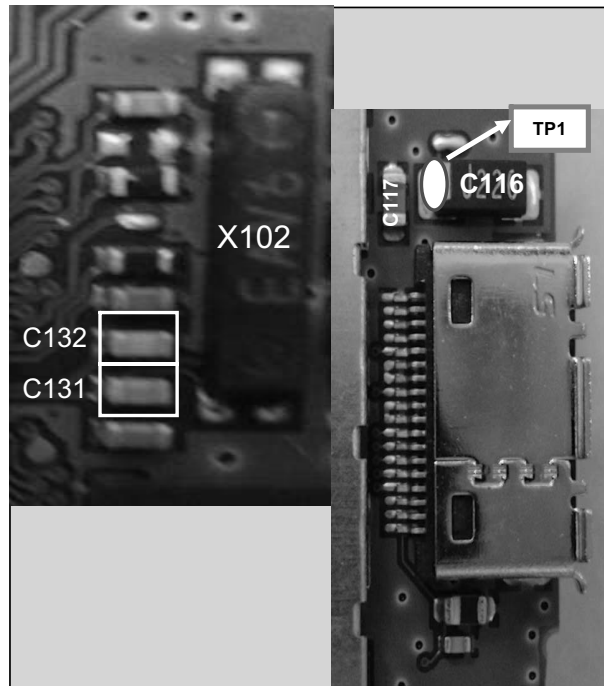
Checking Flow



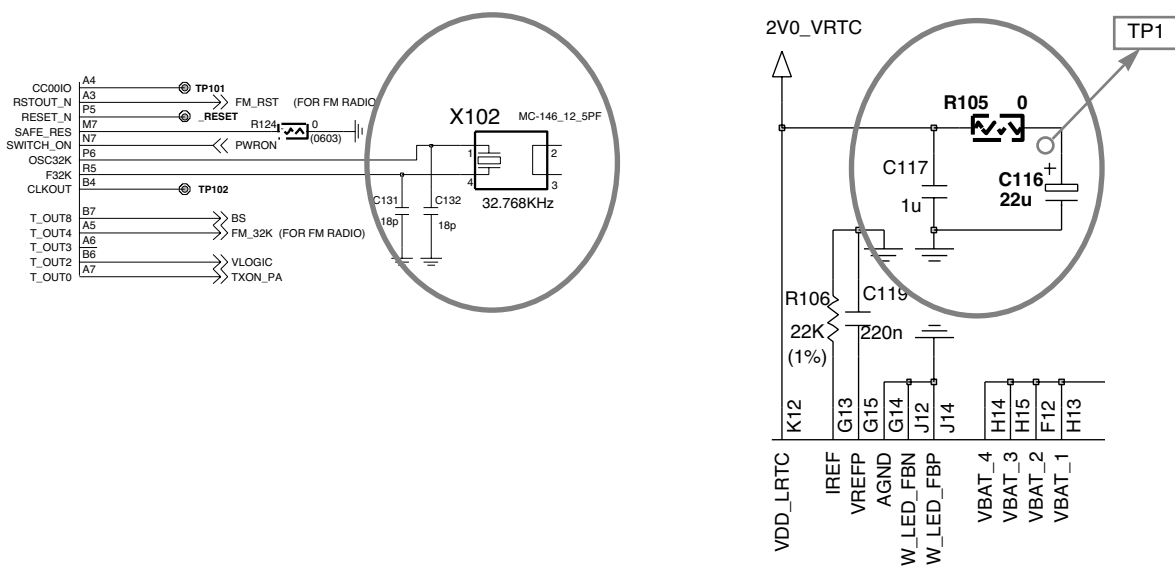
4. TROUBLE SHOOTING

4.7 RTC Trouble

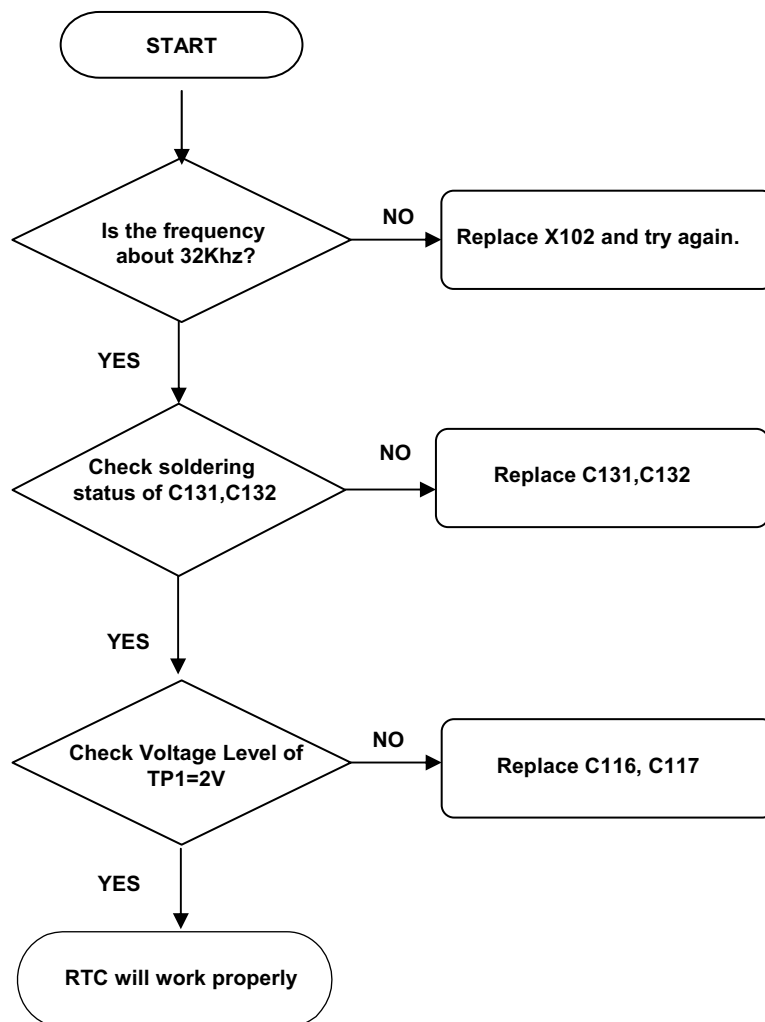
TEST POINT



CIRCUIT DIAGRAM



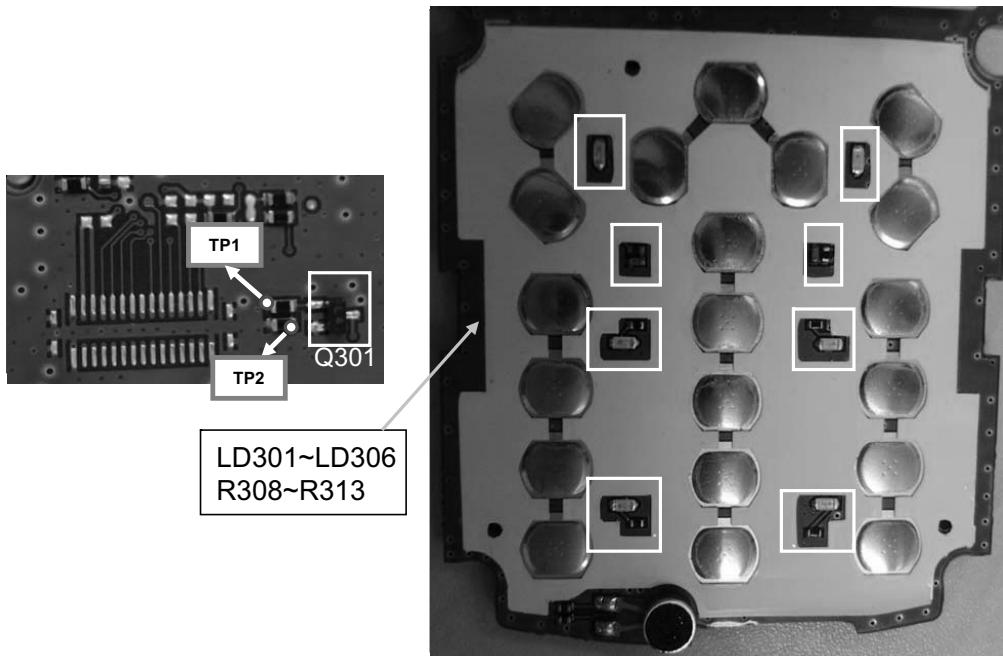
CHECKING FLOW



4. TROUBLE SHOOTING

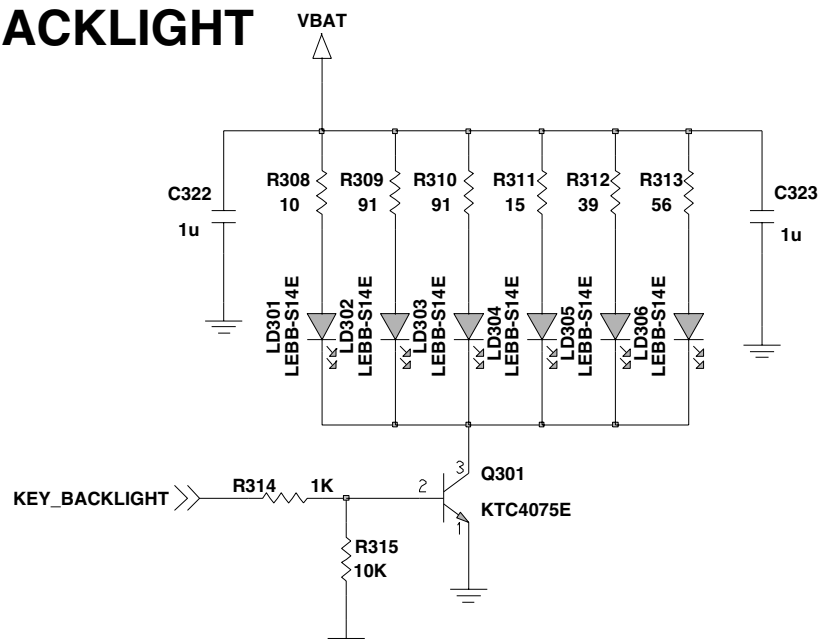
4.8 Key backlight Trouble

TEST POINT



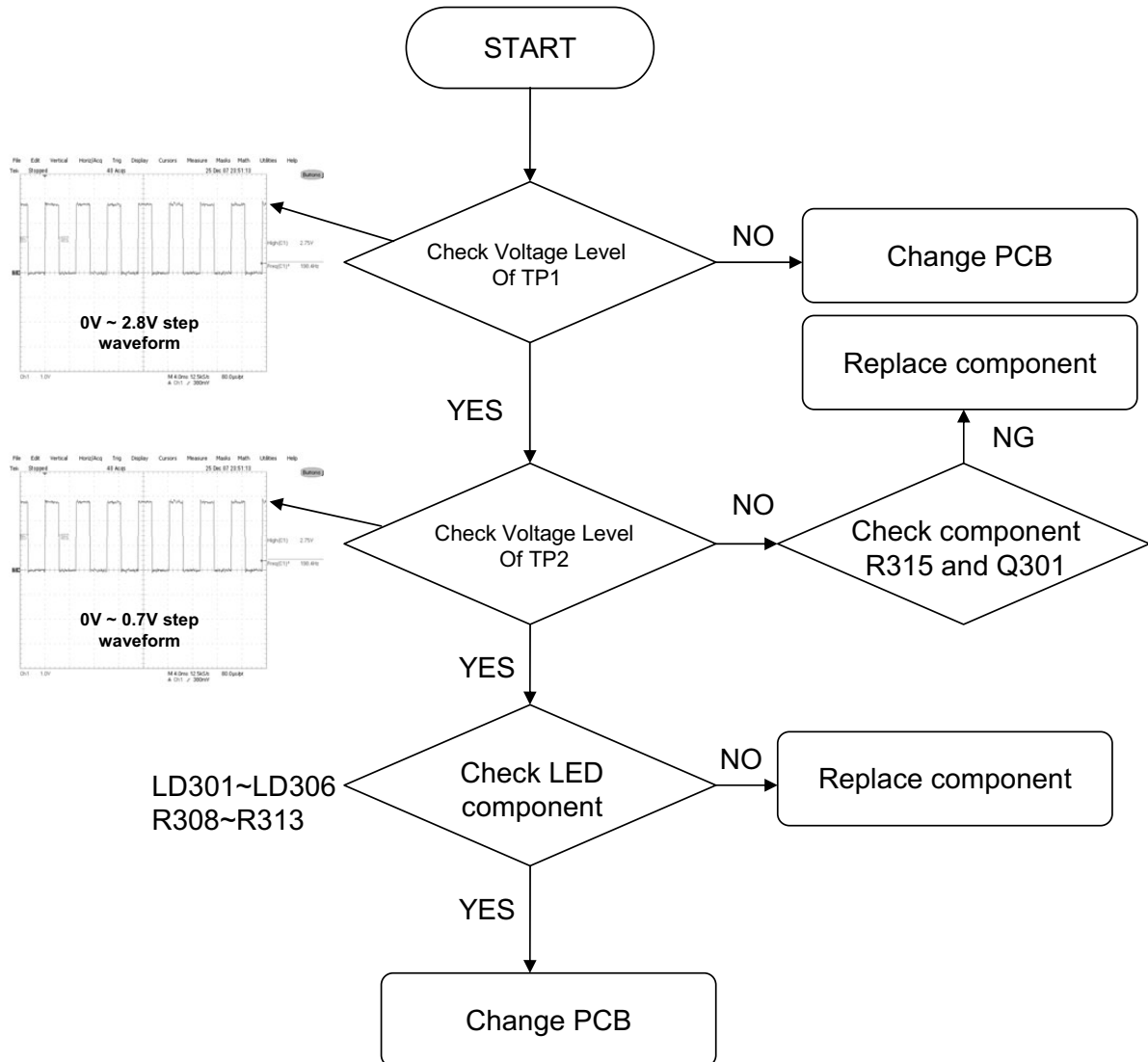
CIRCUIT DIAGRAM

KEY BACKLIGHT



4. TROUBLE SHOOTING

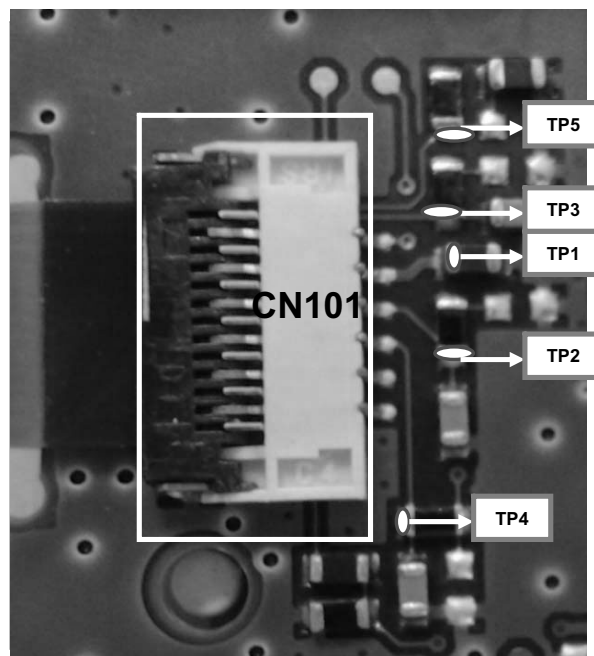
Checking Flow



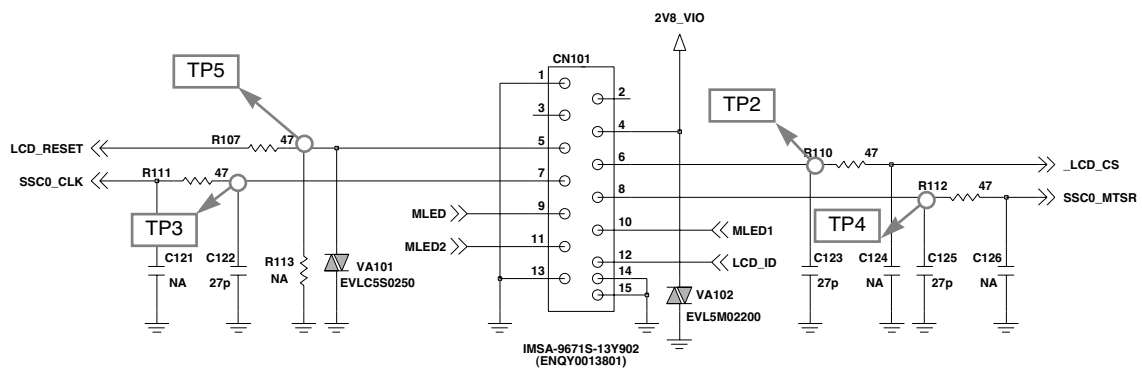
4. TROUBLE SHOOTING

4.9 LCD Trouble

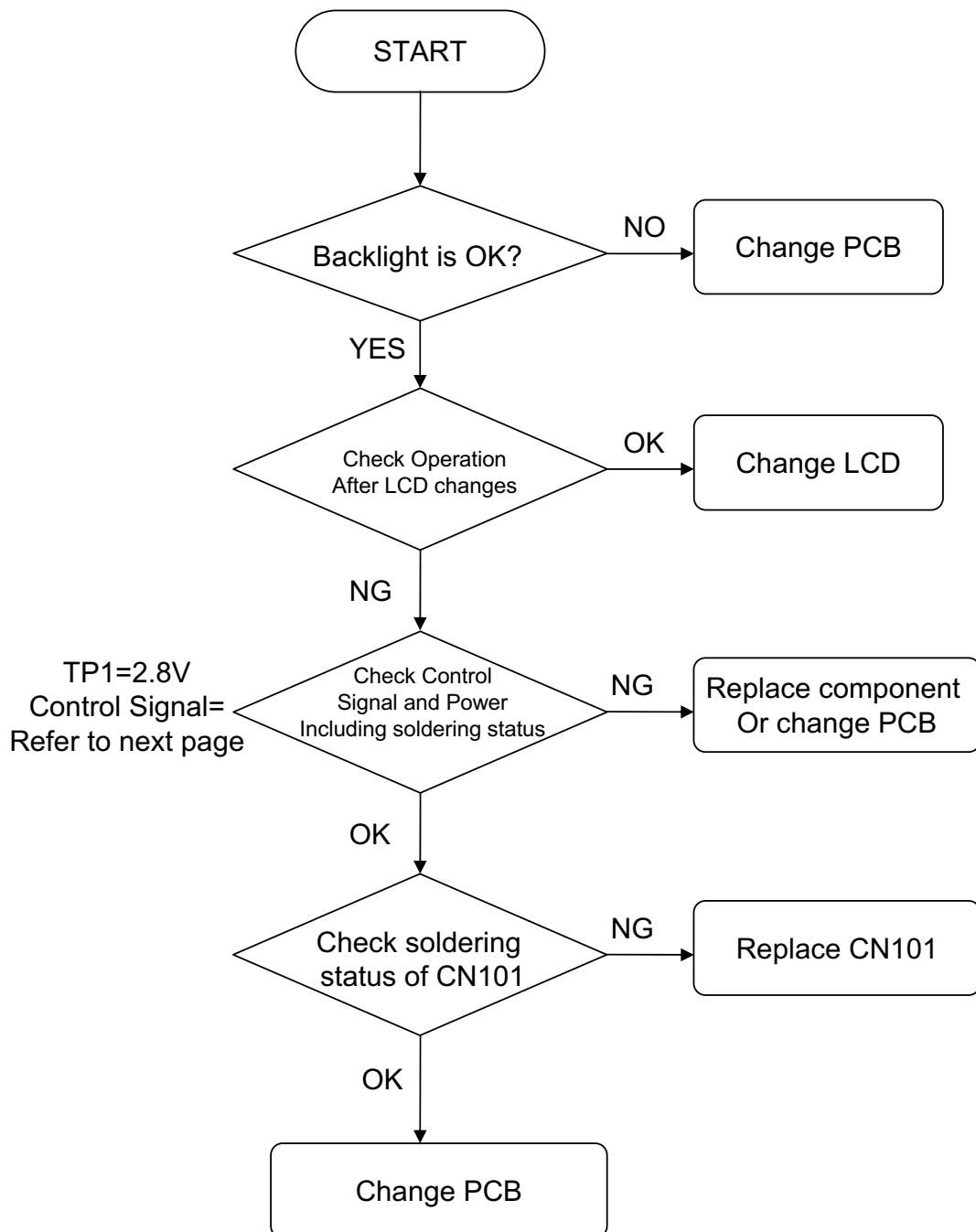
TEST POINT



CIRCUIT DIAGRAM

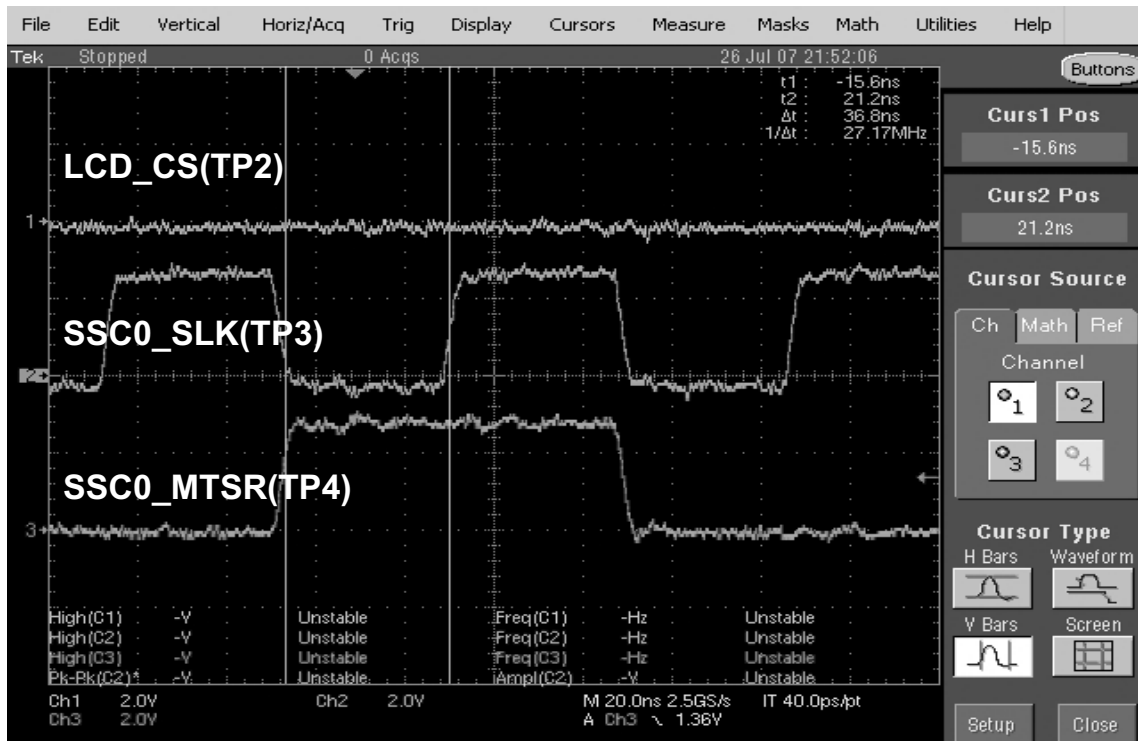


Checking Flow



4. TROUBLE SHOOTING

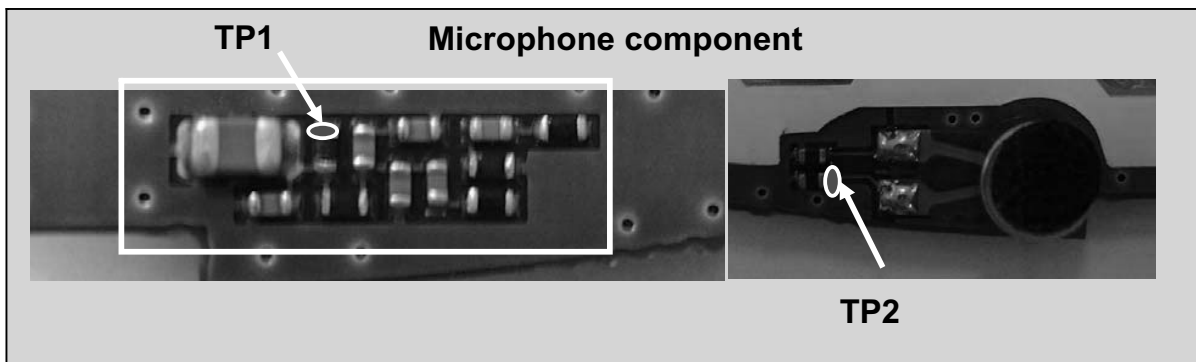
WAVEFORM



- ▶ SSC0_MTSR pattern is out randomly when clock fluctuates, clock frequency is 13MHz and LCD_RESET(TP5) is High(2.8V). Also LCD_CS is LOW(0V).

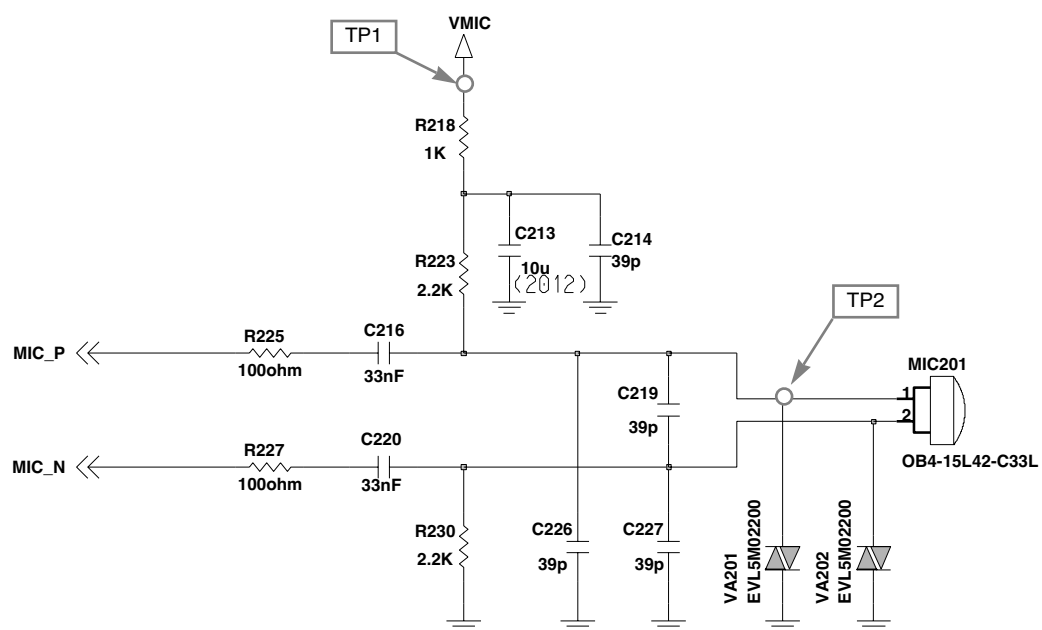
4.10 Microphone Trouble

TEST POINT



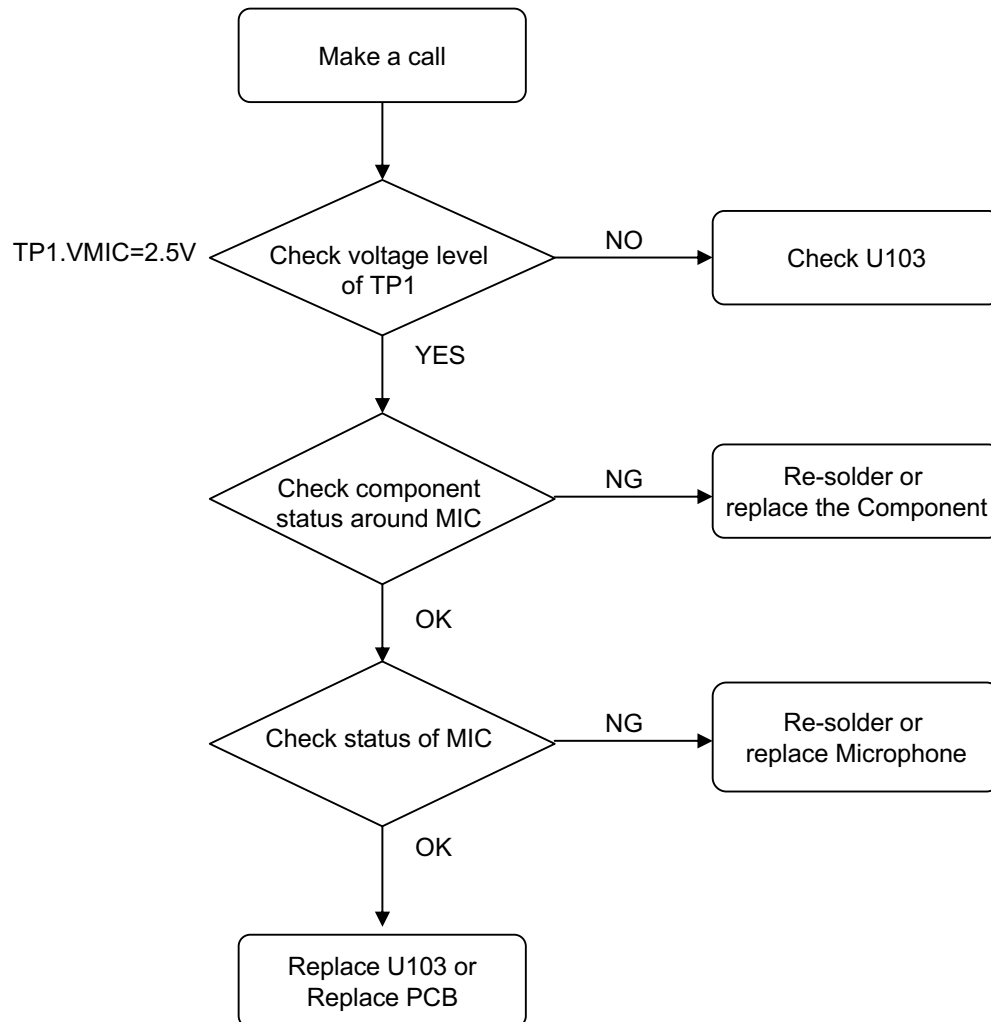
CIRCUIT DIAGRAM

MAIN_MIC



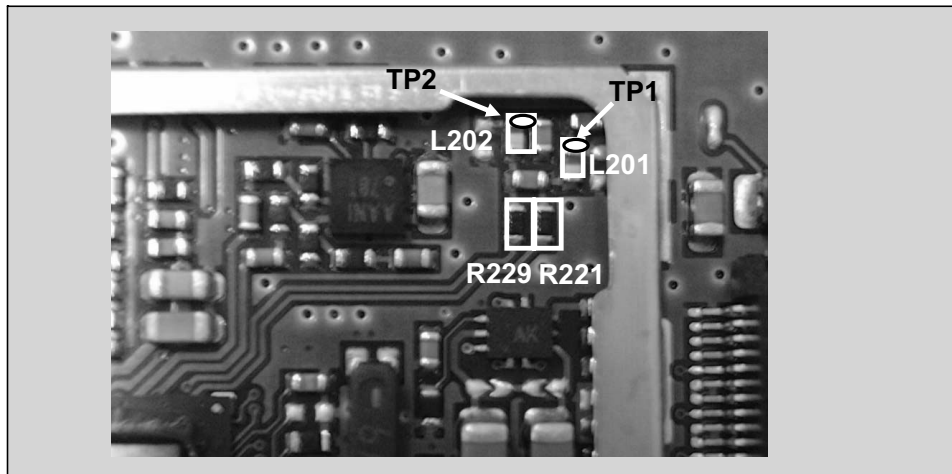
4. TROUBLE SHOOTING

Checking Flow

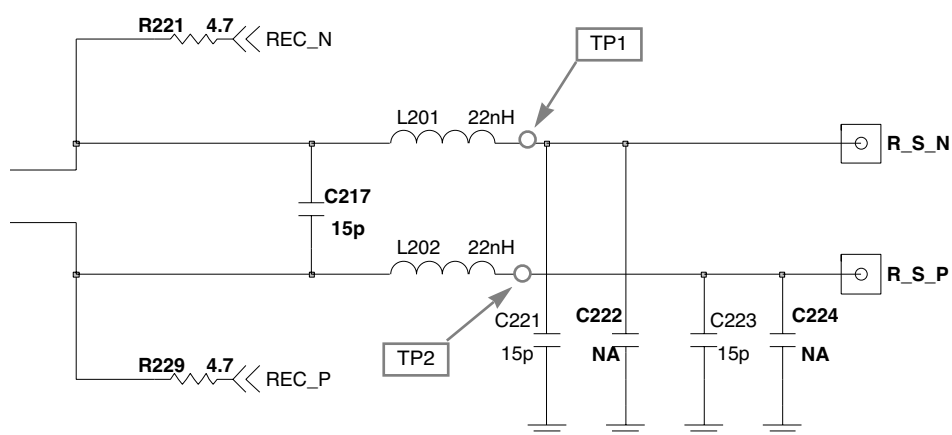


4.11 Receiver Trouble

TEST POINT

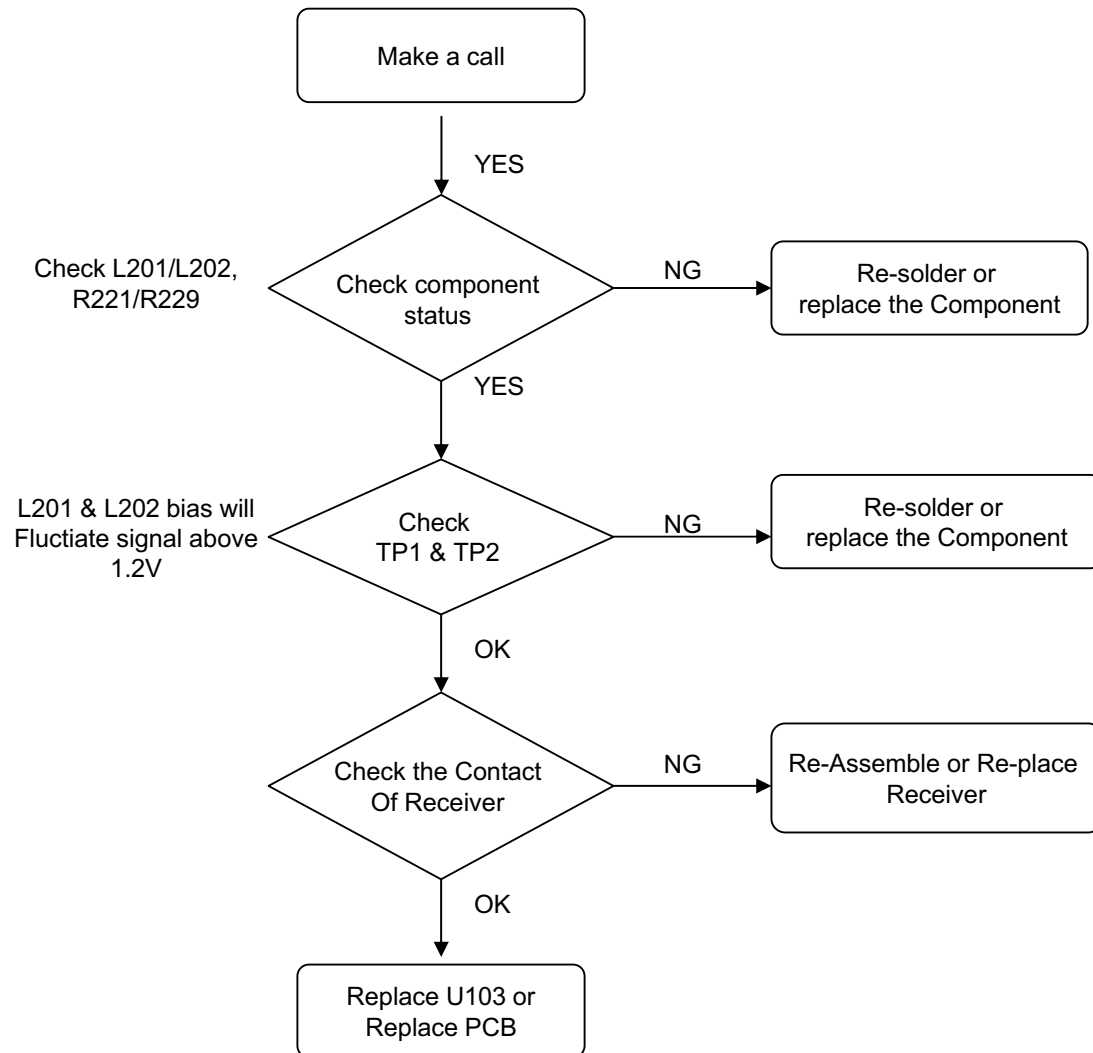


CIRCUIT DIAGRAM



4. TROUBLE SHOOTING

Checking Flow

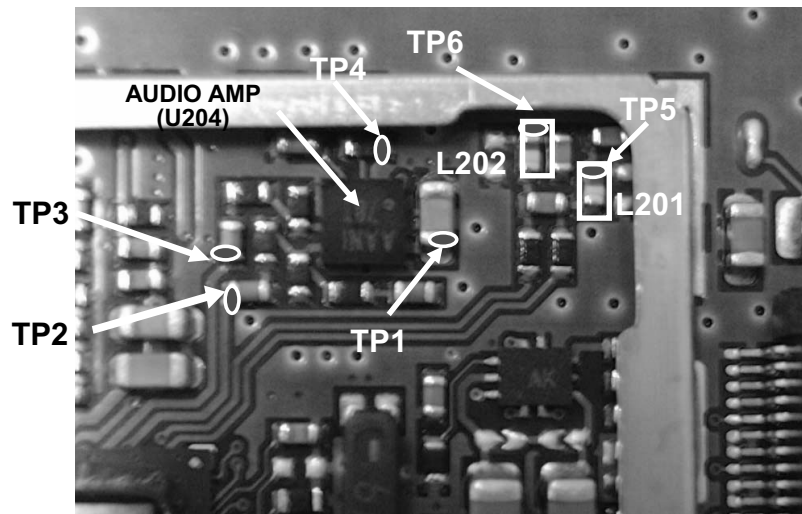


4.12 Speaker Trouble

TEST POINT

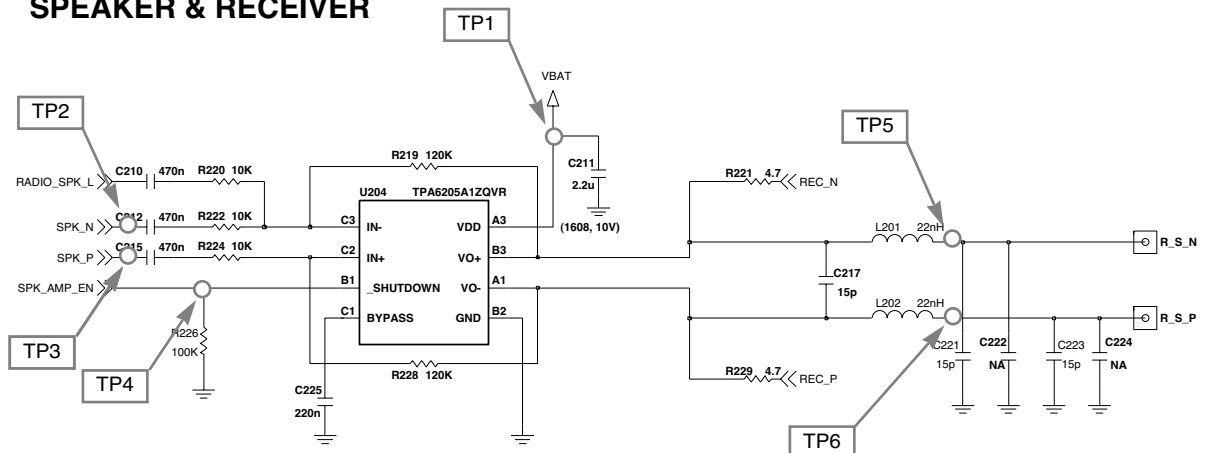
Check Points

- Speaker Pin contact
- Audio amp soldering



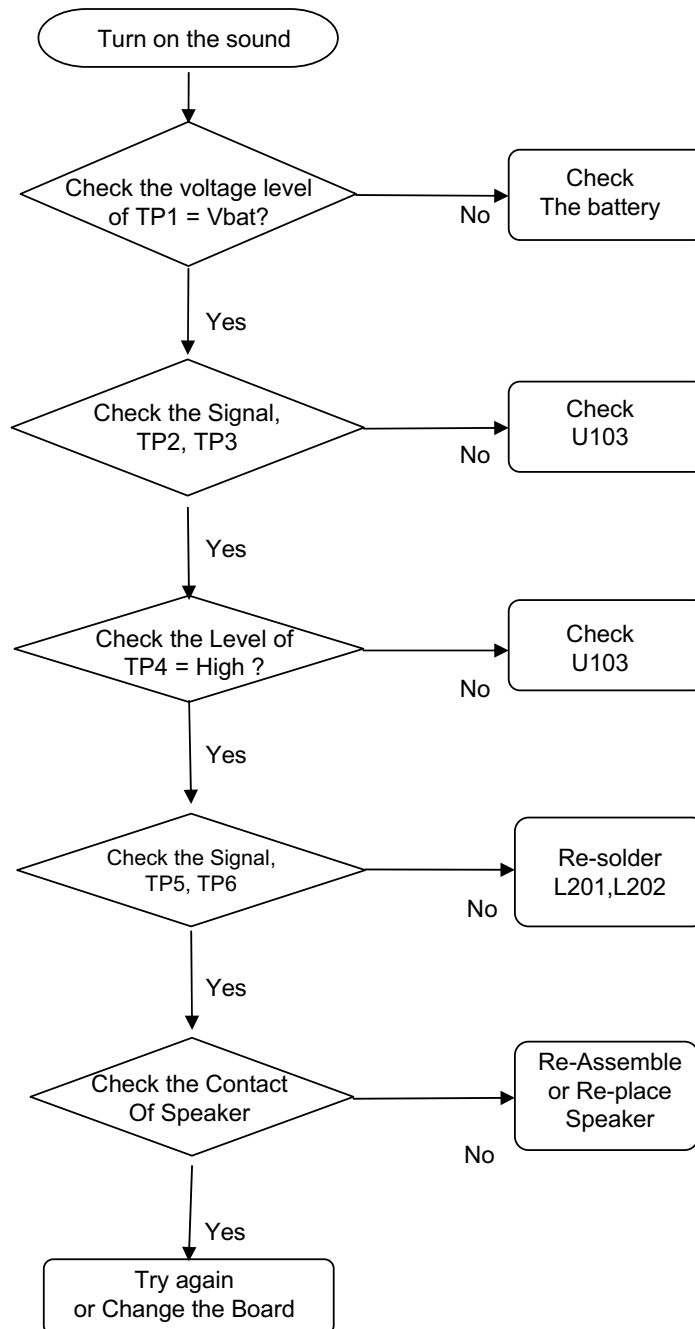
CIRCUIT

SPEAKER & RECEIVER



4. TROUBLE SHOOTING

Checking Flow

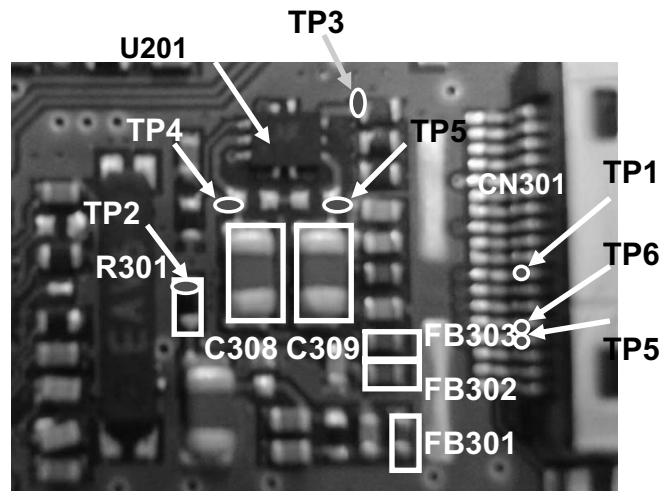


4.13 Headphone Trouble

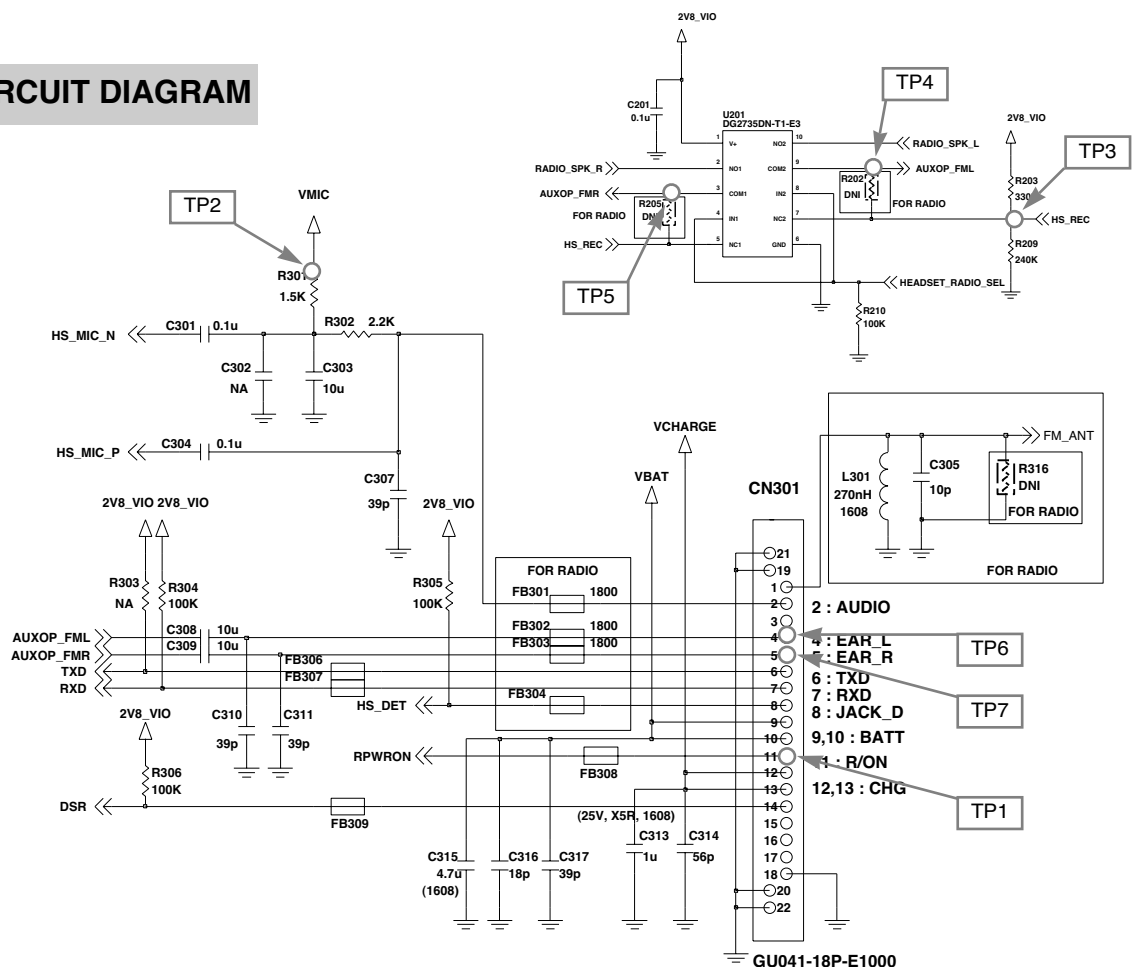
TEST POINT

Check Points

- 18pin IO connector
- Passive Parts soldering Status

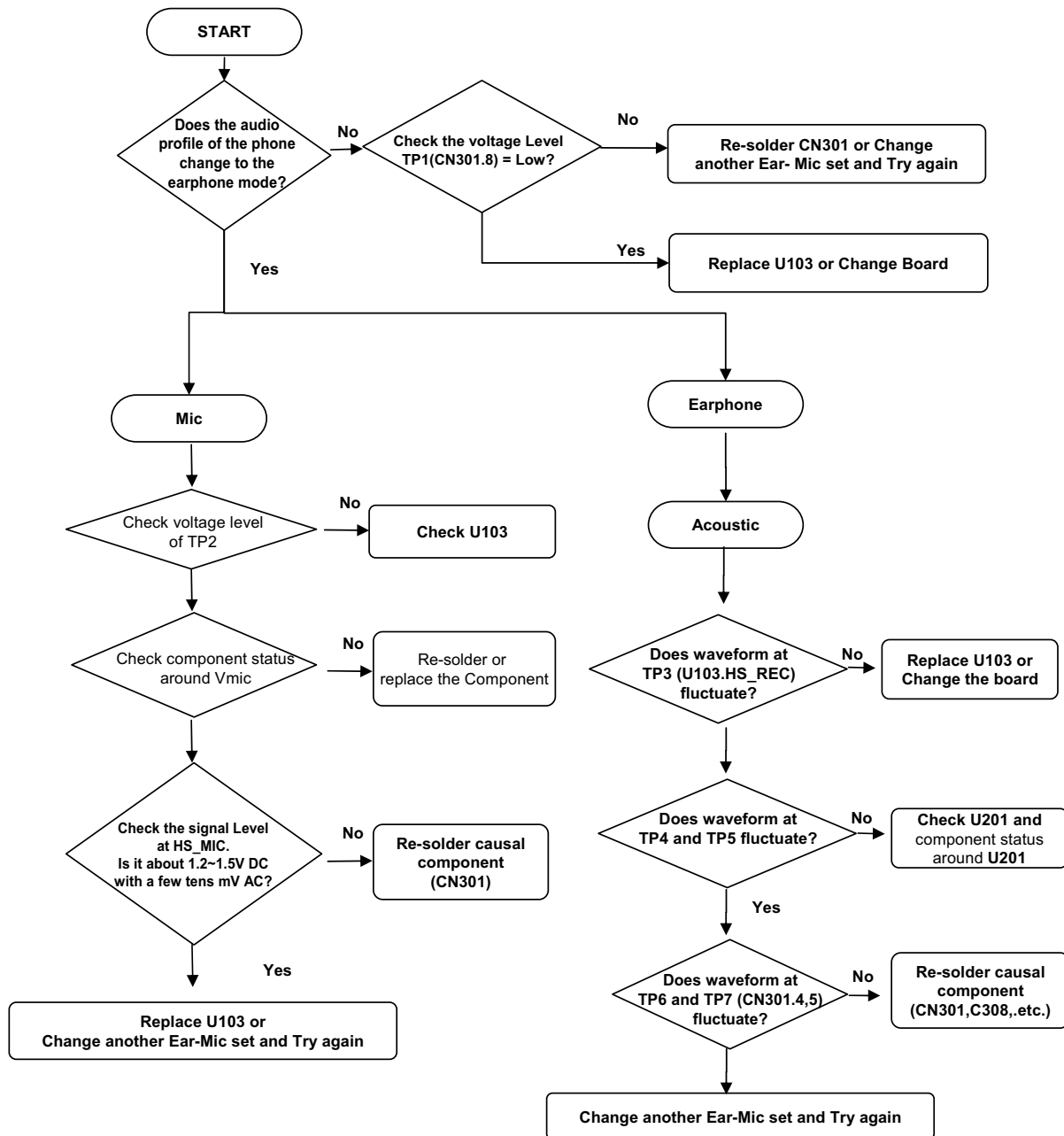


CIRCUIT DIAGRAM



4. TROUBLE SHOOTING

CHECKING FLOW

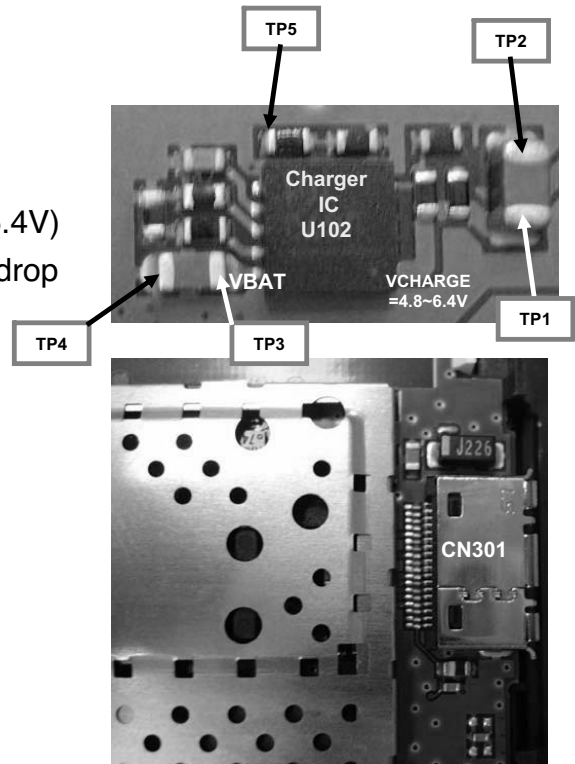


4.14 Charging Trouble

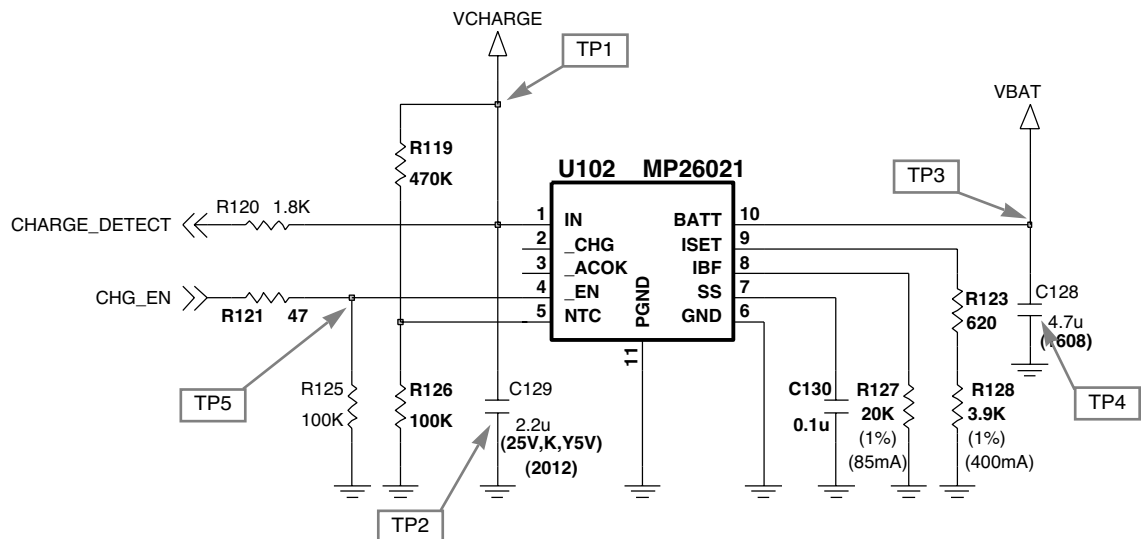
TEST POINT

Check Points

- Connection of TA (check TA voltage 4.8 ~ 6.4V)
- Charging Current Path component voltage drop
- Battery voltage
- Charging IC

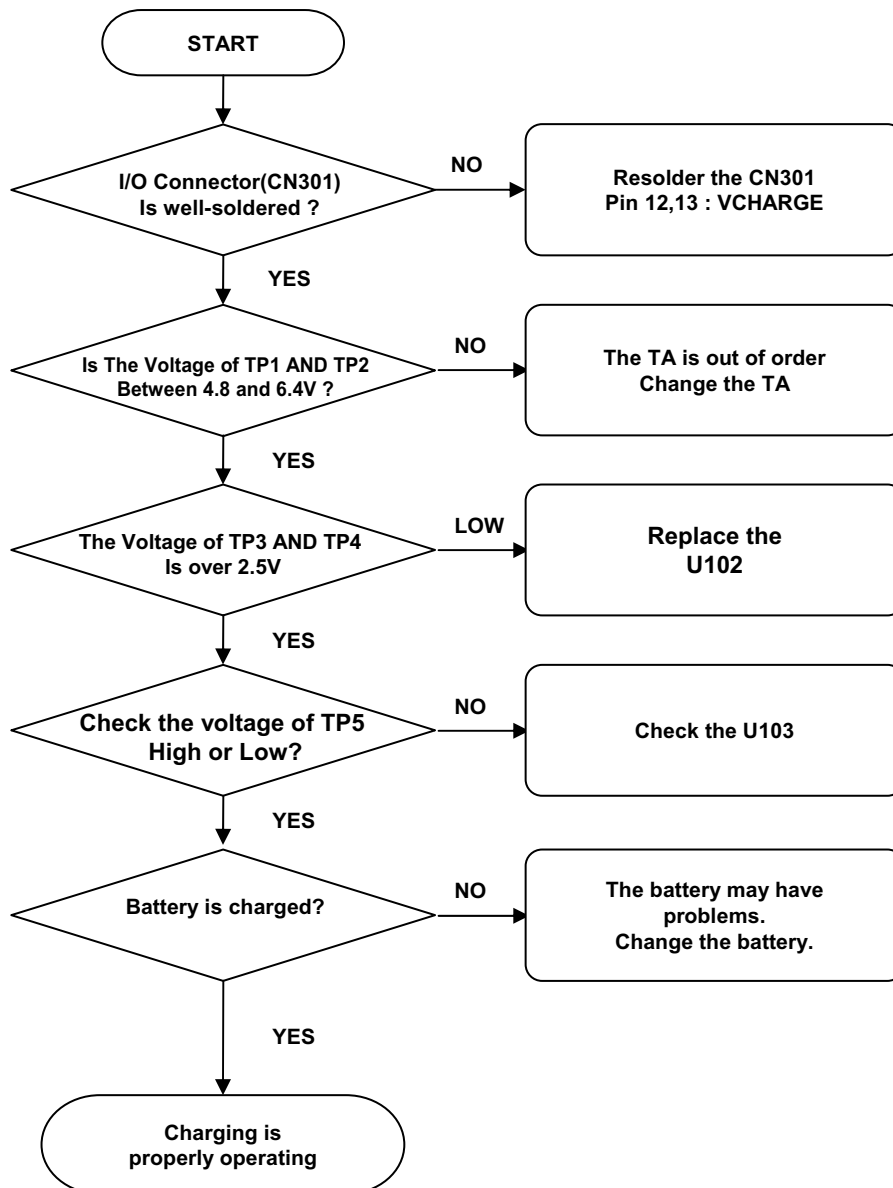


CIRCUIT



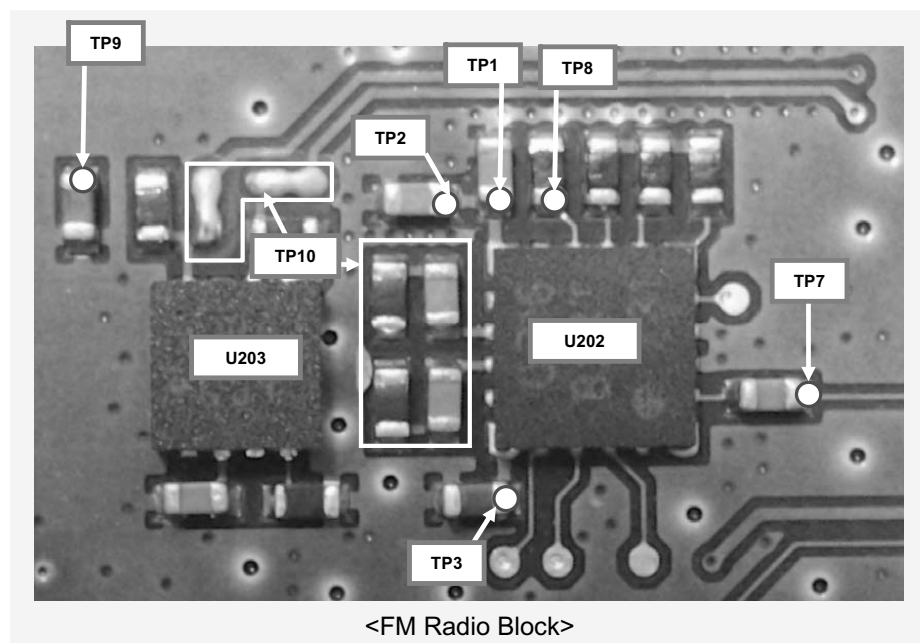
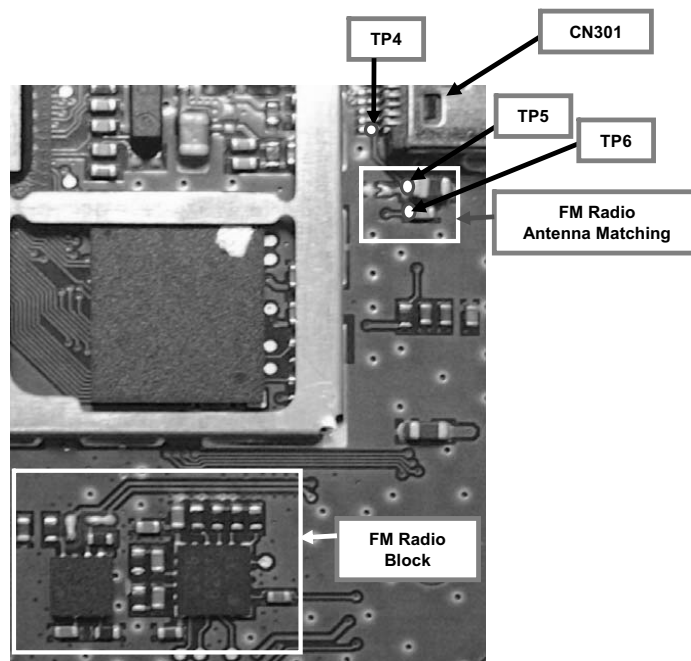
4. TROUBLE SHOOTING

Checking Flow



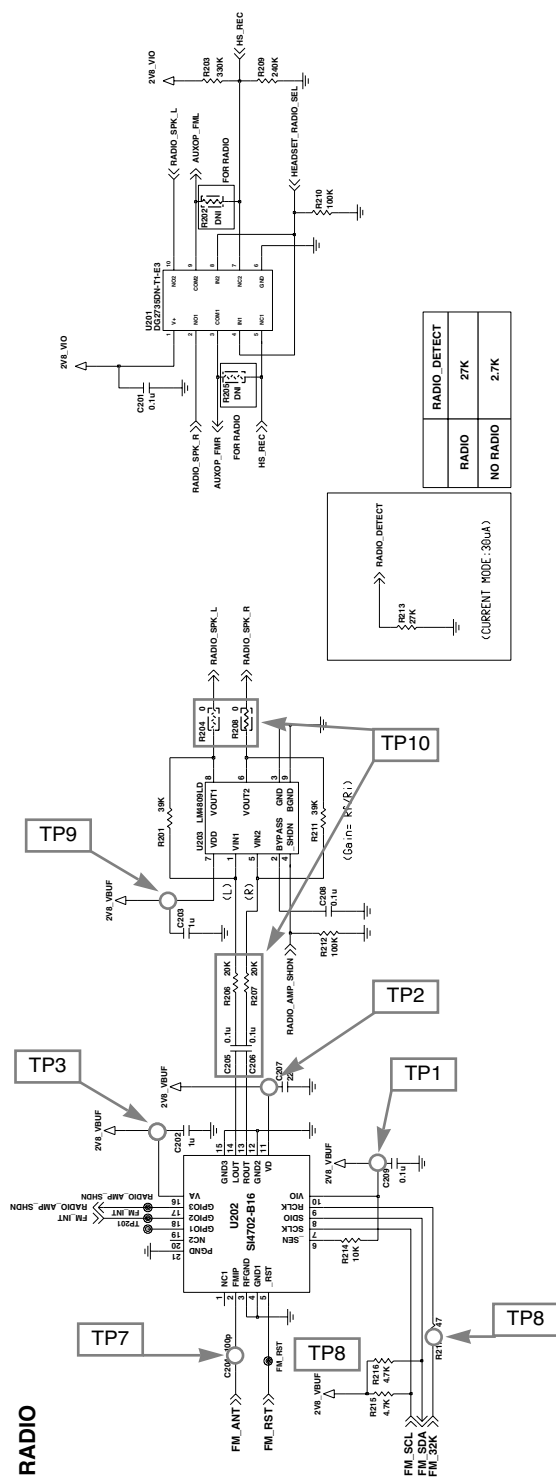
4.15. FM Radio Trouble

TEST POINT

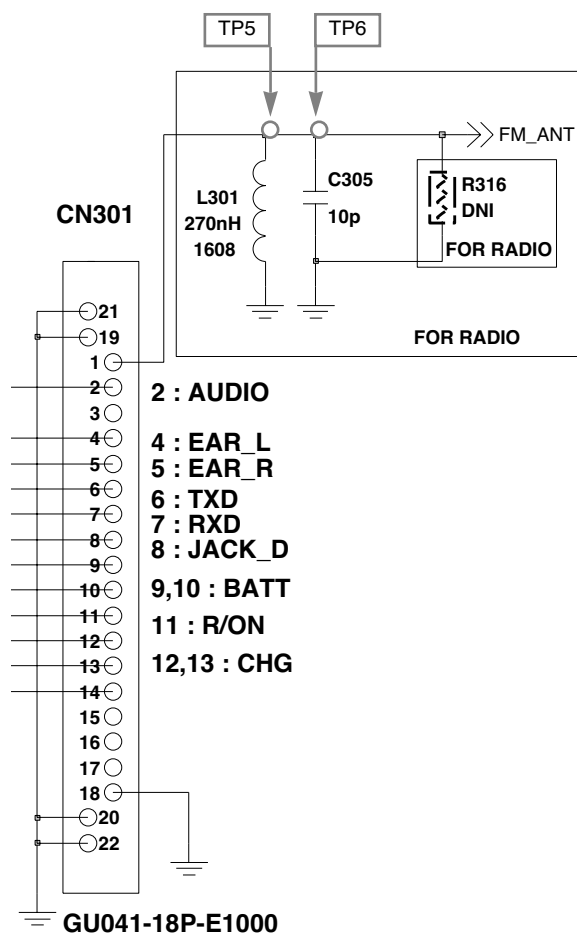


4. TROUBLE SHOOTING

CIRCUIT DIAGRAM

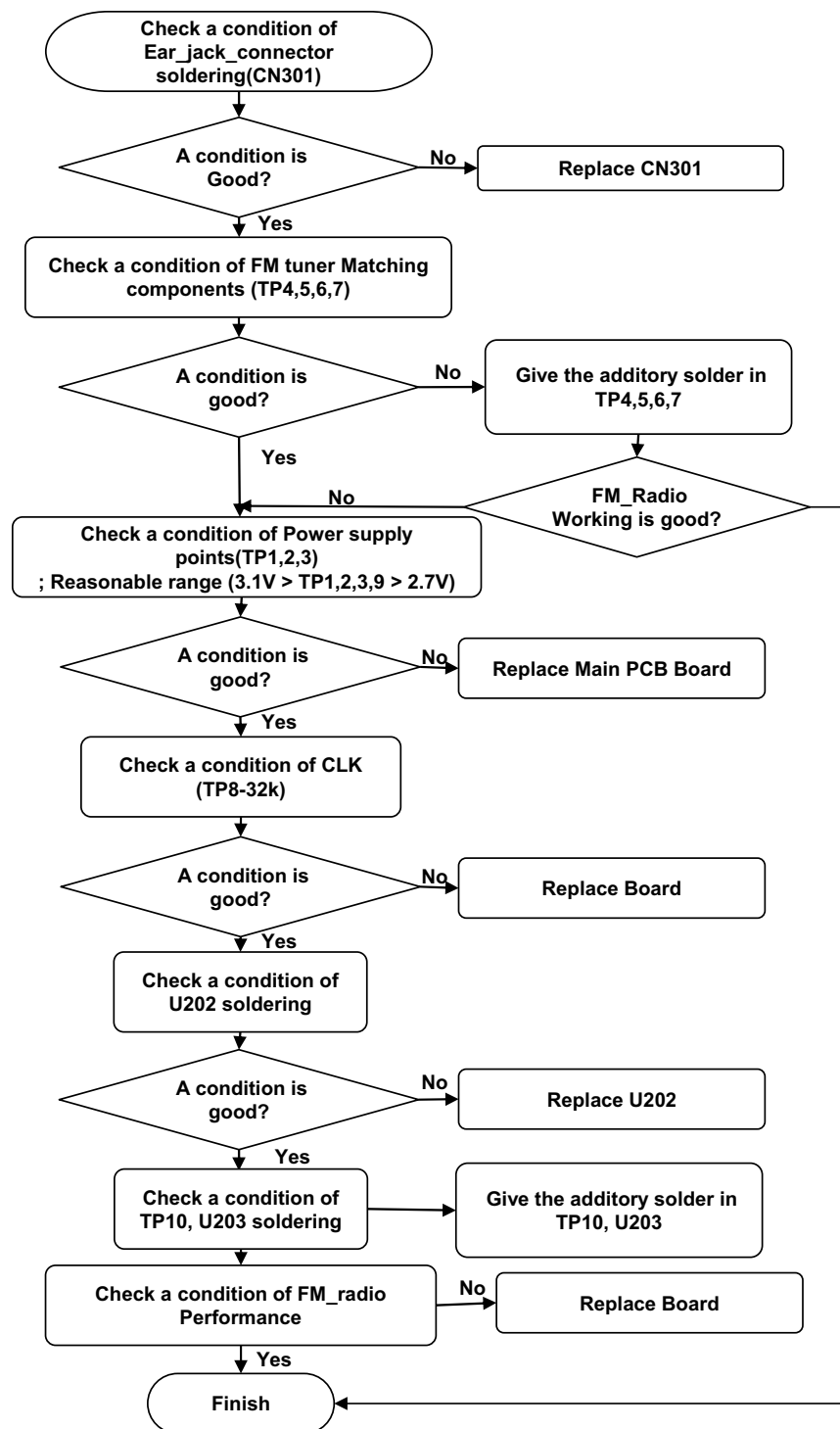


<FM Radio Block>



<FM Radio Antenna matching>

Checking Flow



5. DOWNLOAD

5. DOWNLOAD

5.1 Download Setup

Configure system like figure 5-1.

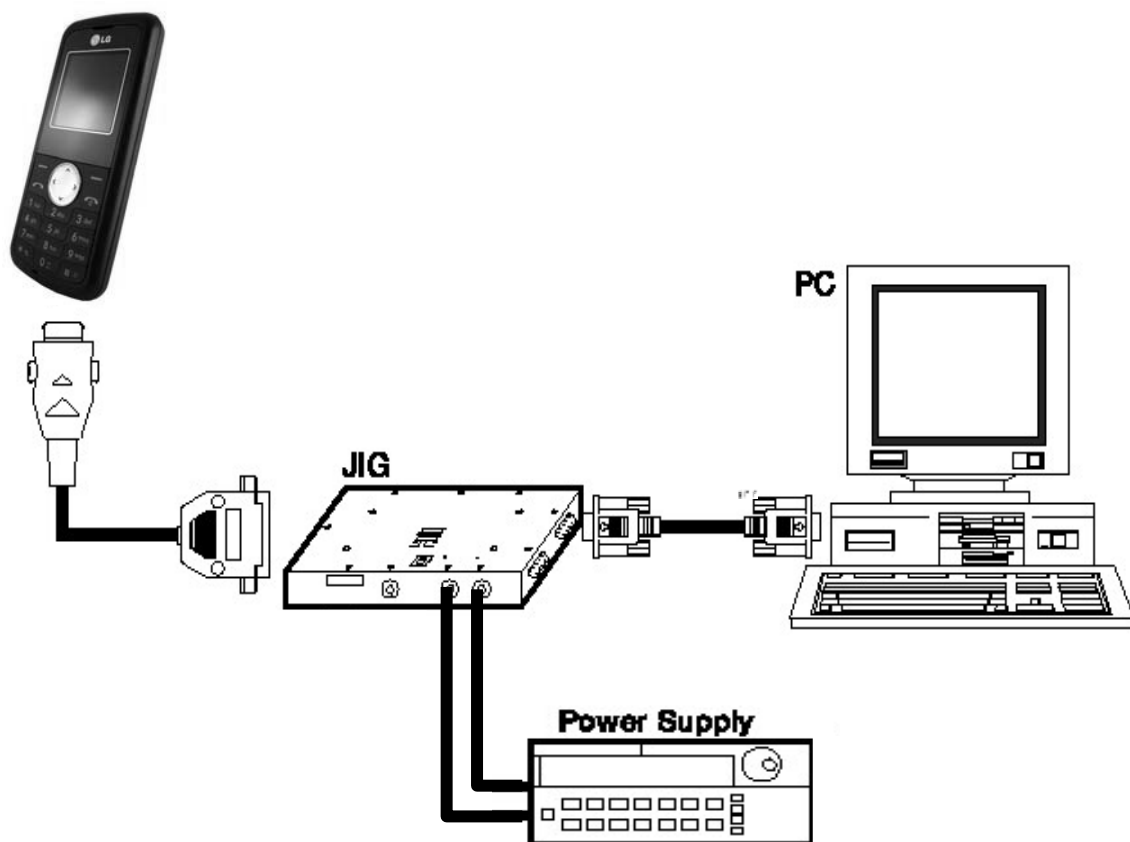
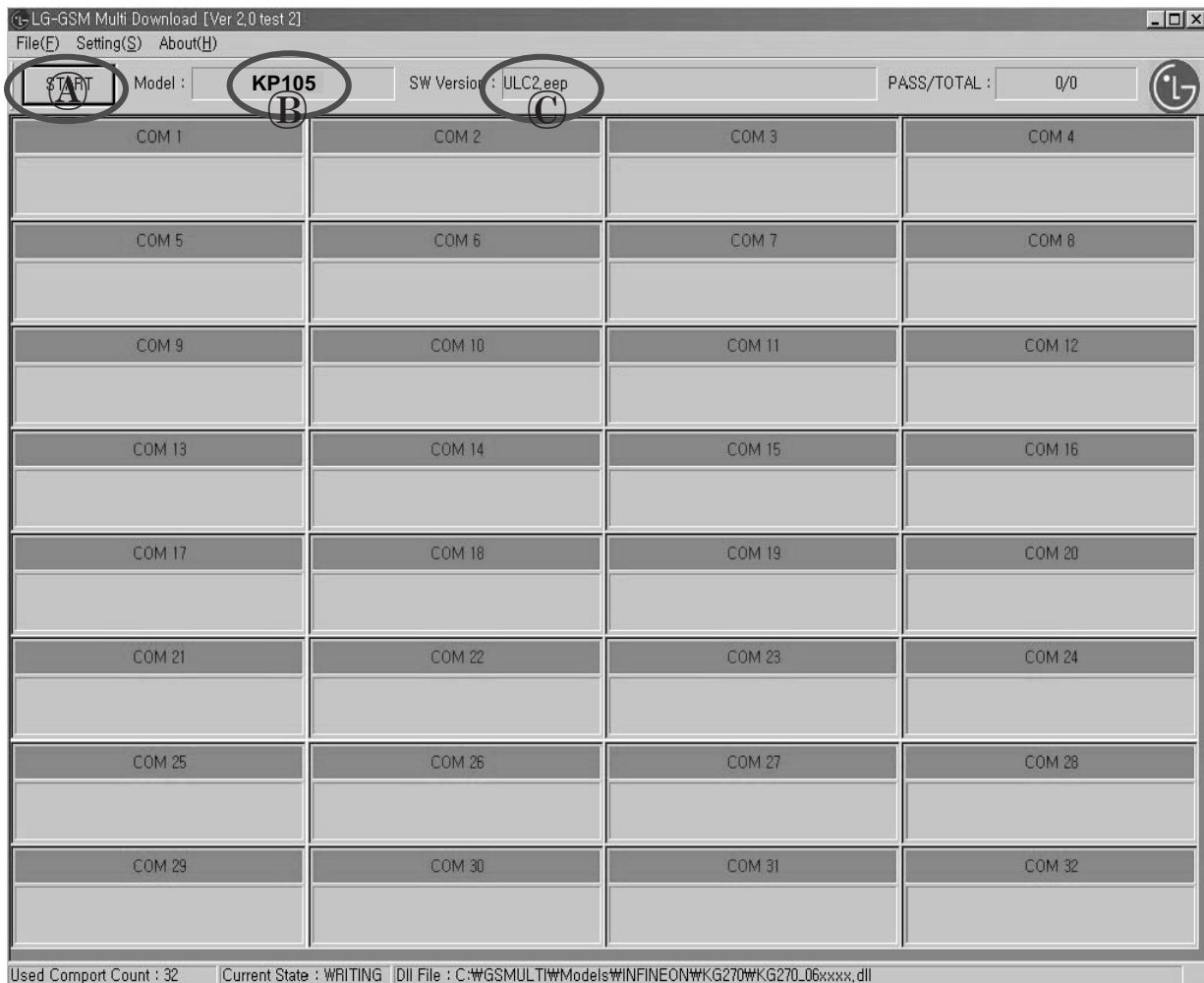


Figure 5-1. Download Setup

5.2 Download Process

5.2.1. Download step[1]



Ⓐ : Start or Stop download

Ⓑ : Selected configuration DLL file

Ⓒ : File name downloading

File(F) → Exit(X) : End program

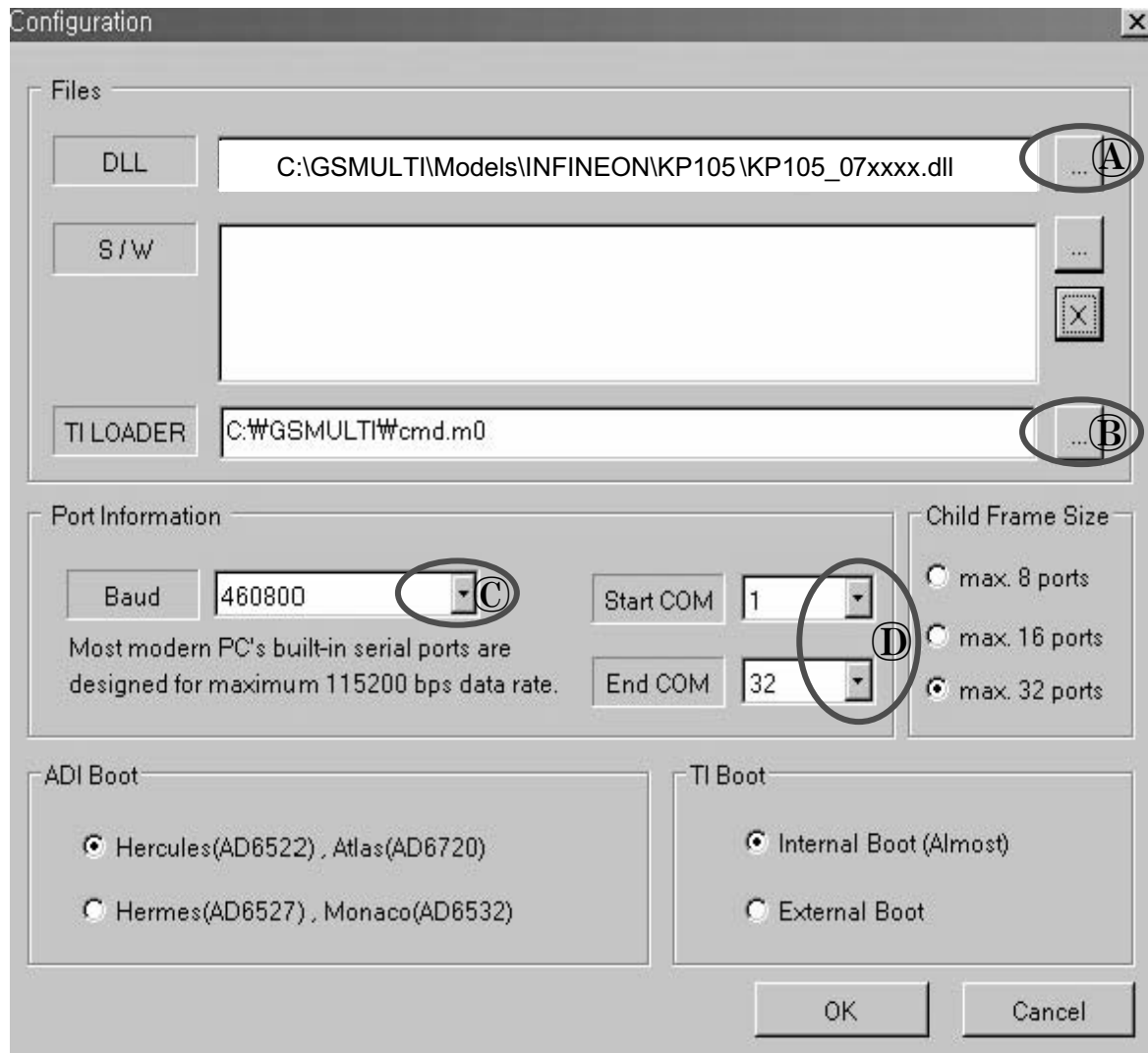
Setting(S) → Configuration : configuration download condition DLL, SW files and etc.

About(H) → MultiGSM : Provide version information

First, select Setting Menu.

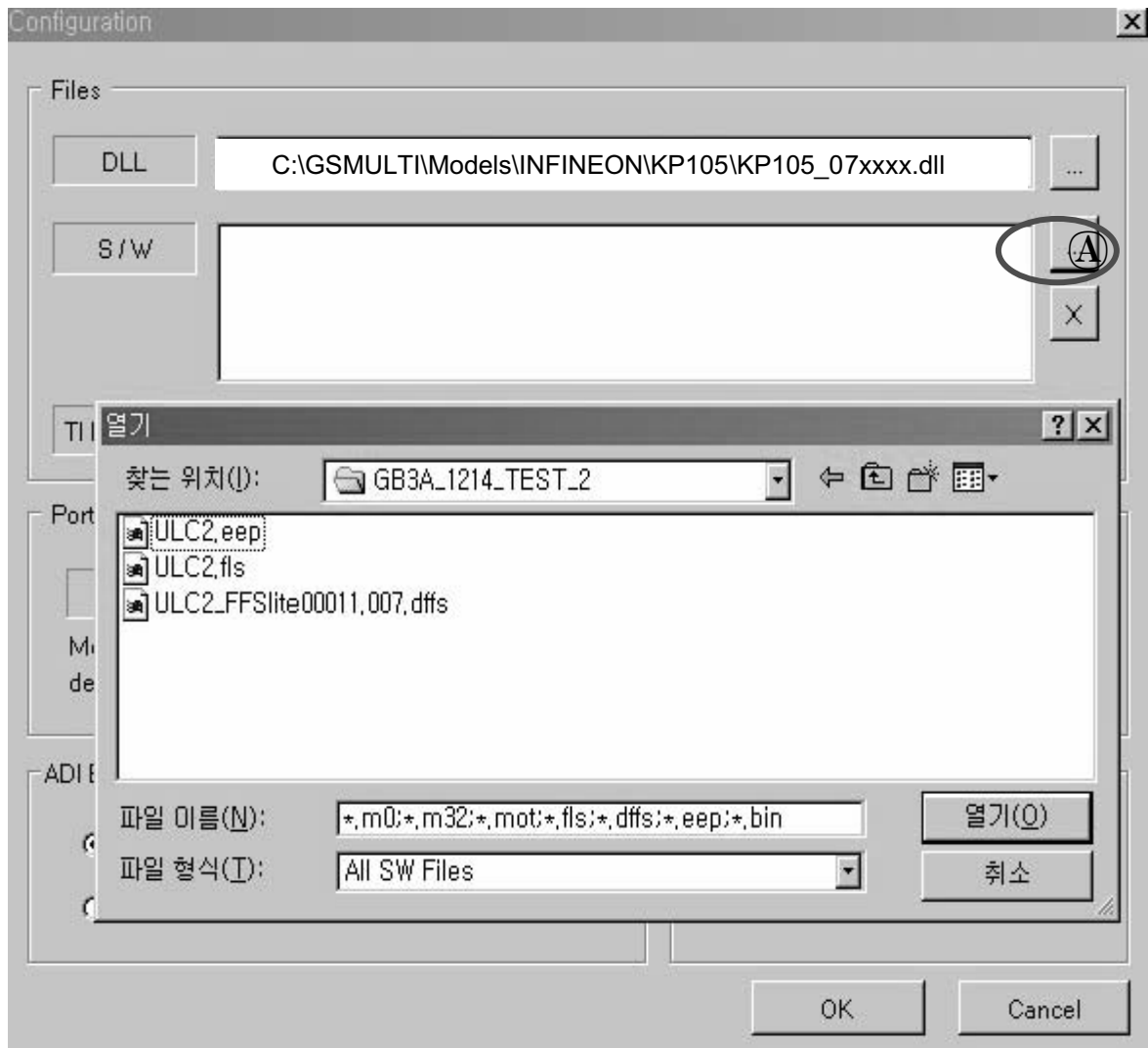
5. DOWNLOAD

5.2.2. Download step[2]



- Ⓐ : Select a appropriated DLL file
- You must select KP105_xxxxxx.DLL file.
- Ⓑ : Select configuration file
You must select cmd.m0 file
- Ⓒ : Select download speed
You must 460800. System supports maximum 460800bps.
- Ⓓ : Select port
select start and end port be operated

5.2.3. Download step[3]



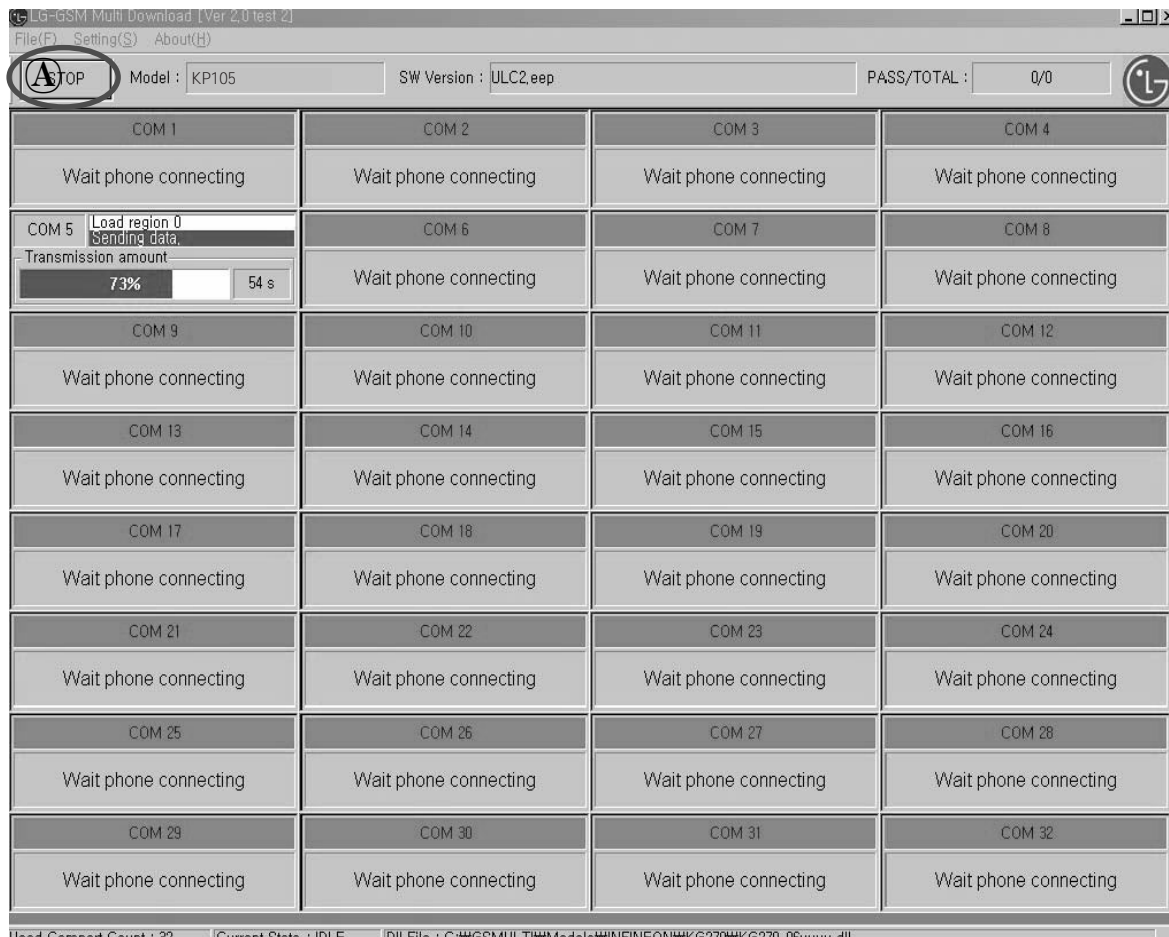
Ⓐ : Select files downloaded

KP105 have 4 files, *.eep, *.flc, *.dffs and *.cust.

But You must not select *.eep file.

5. DOWNLOAD

5.2.4. Download step[4]



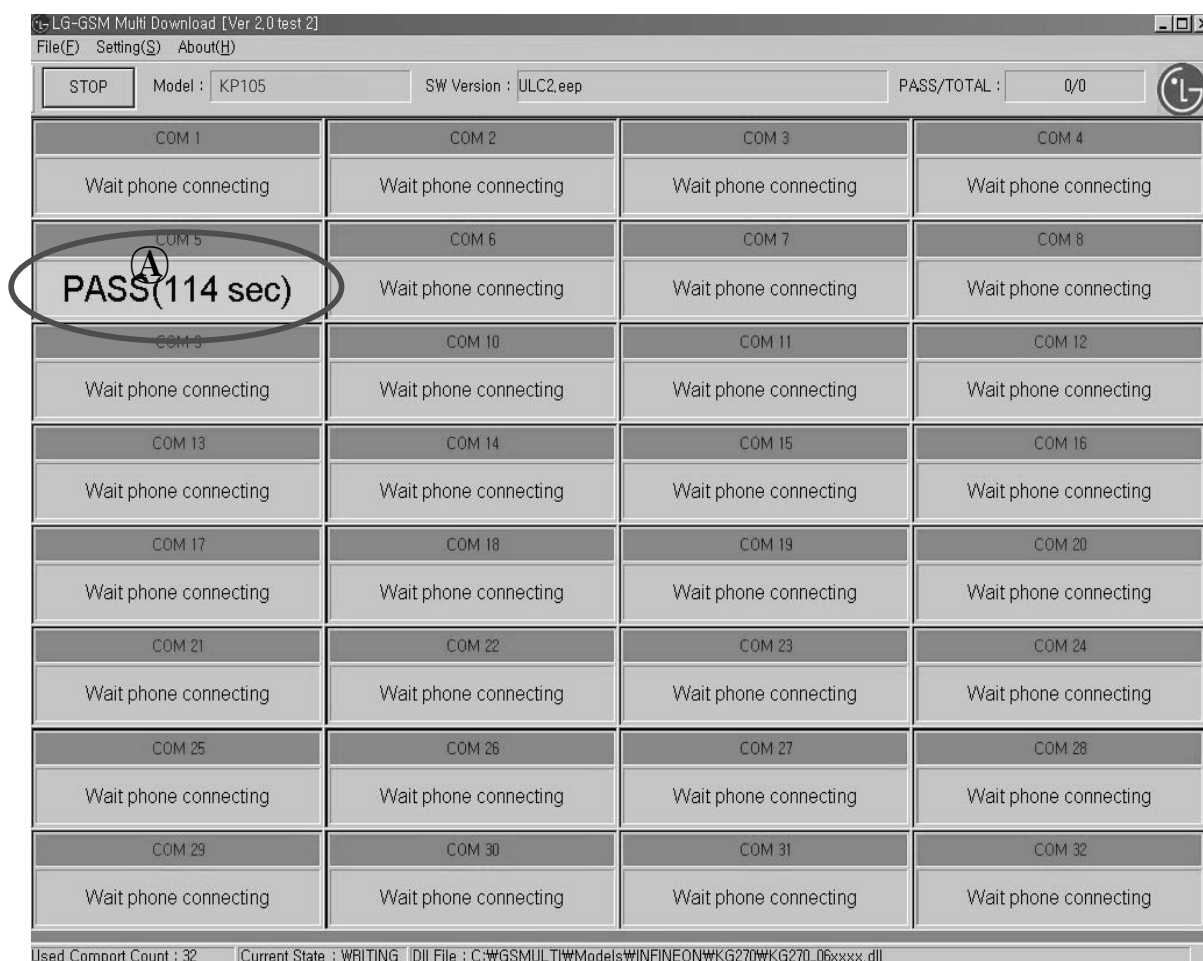
Ⓐ : Start download and stop download next step.

If configuration is finished, then push start button and then button is changed to STOP.

Turn on power of multi download and connector phones.

If download is started, then push start button else program will download repeatedly.

5.2.5. Download step[5]

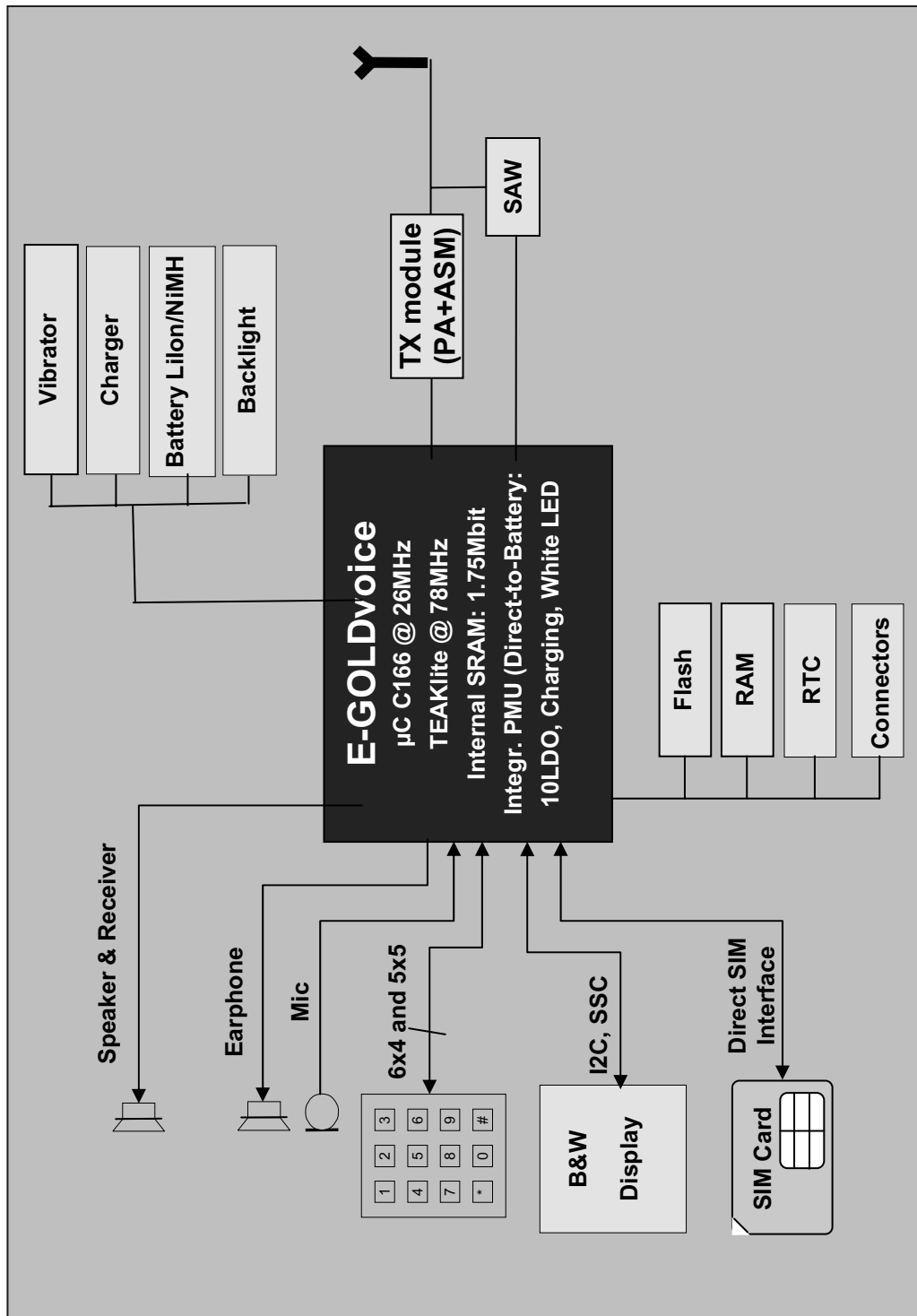


Ⓐ : This region appears donwload status.

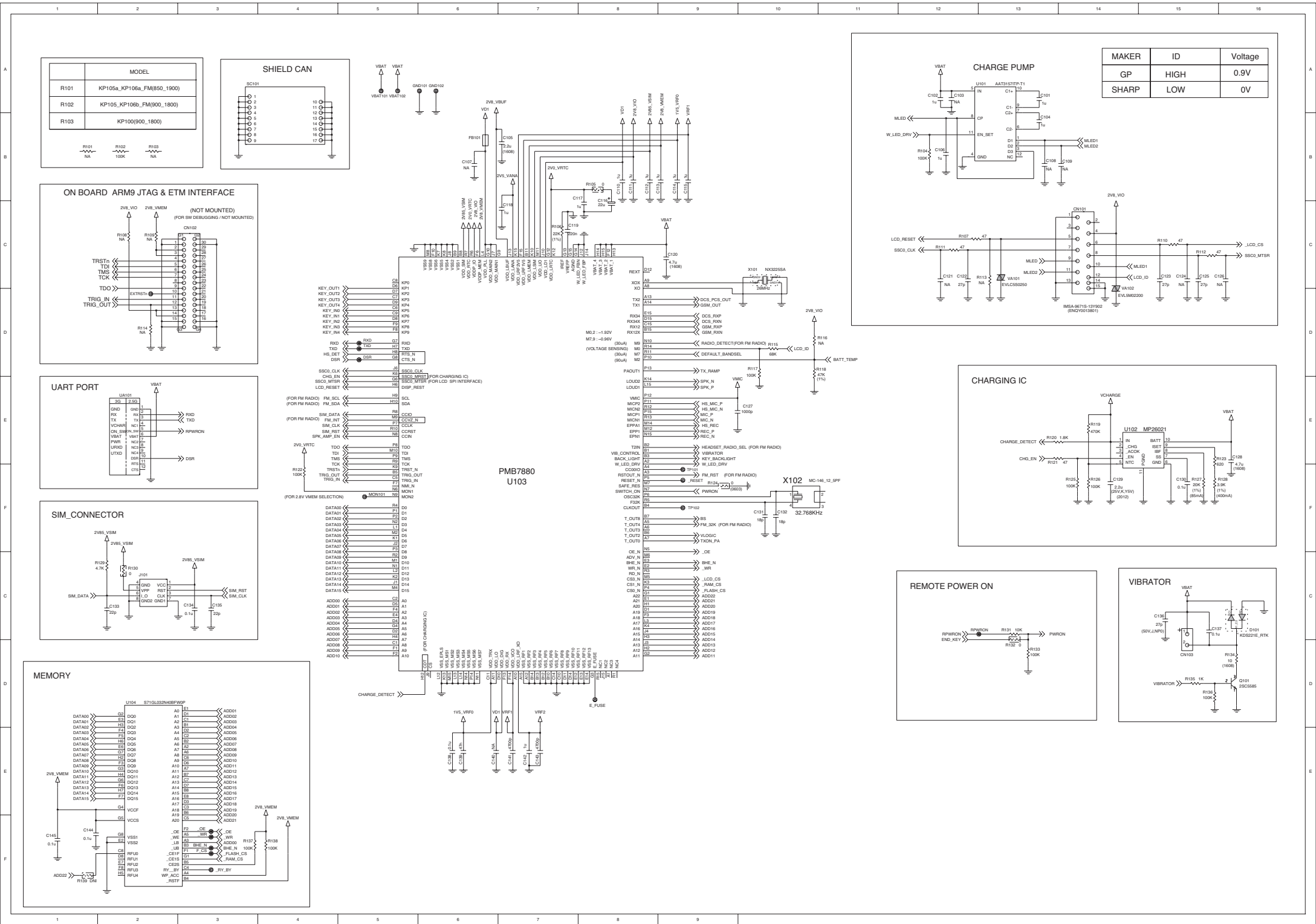
If download is finished, PASS or FAIL.message is showed.

6. BLOCK DIAGRAM

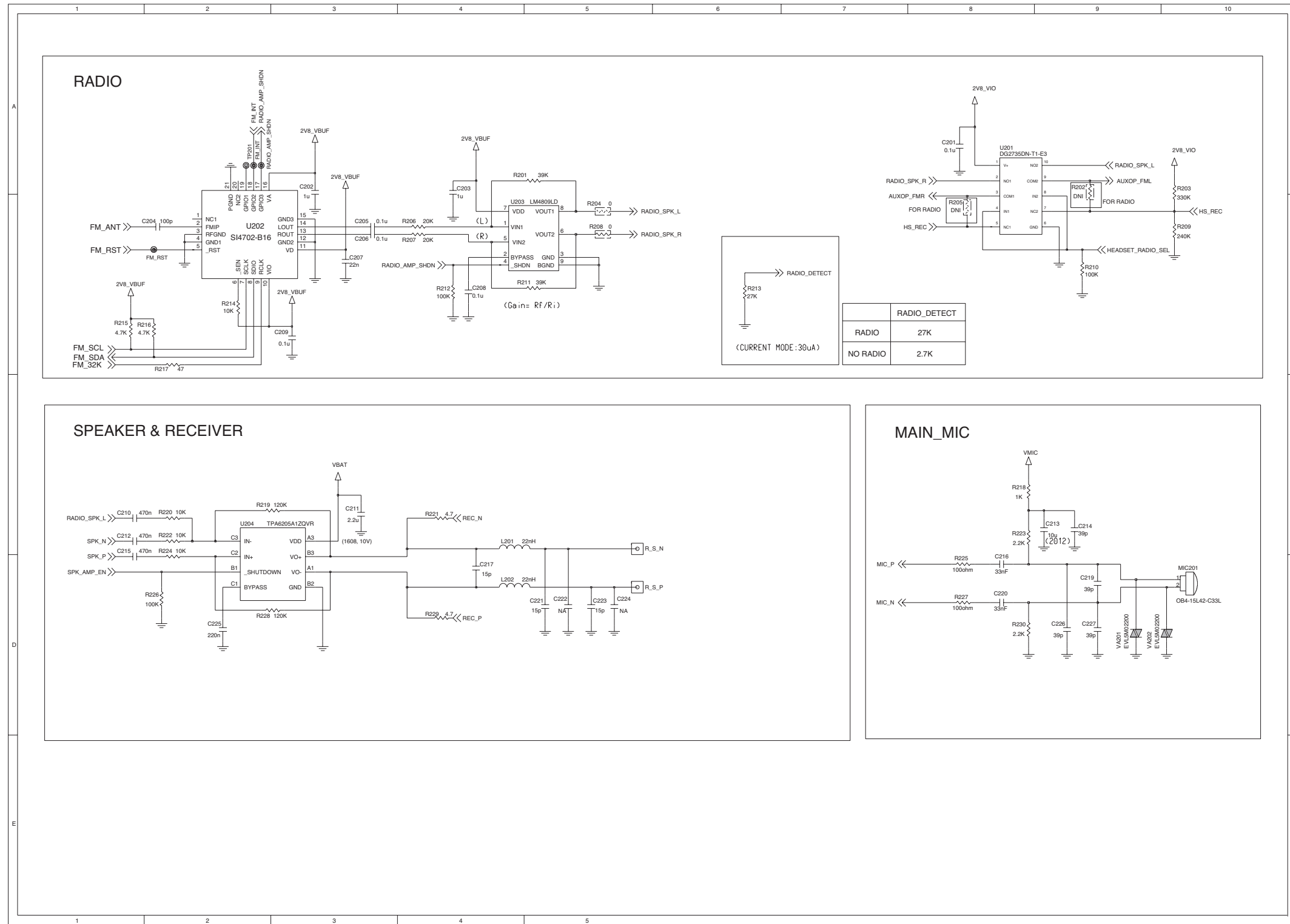
6. BLOCK DIAGRAM



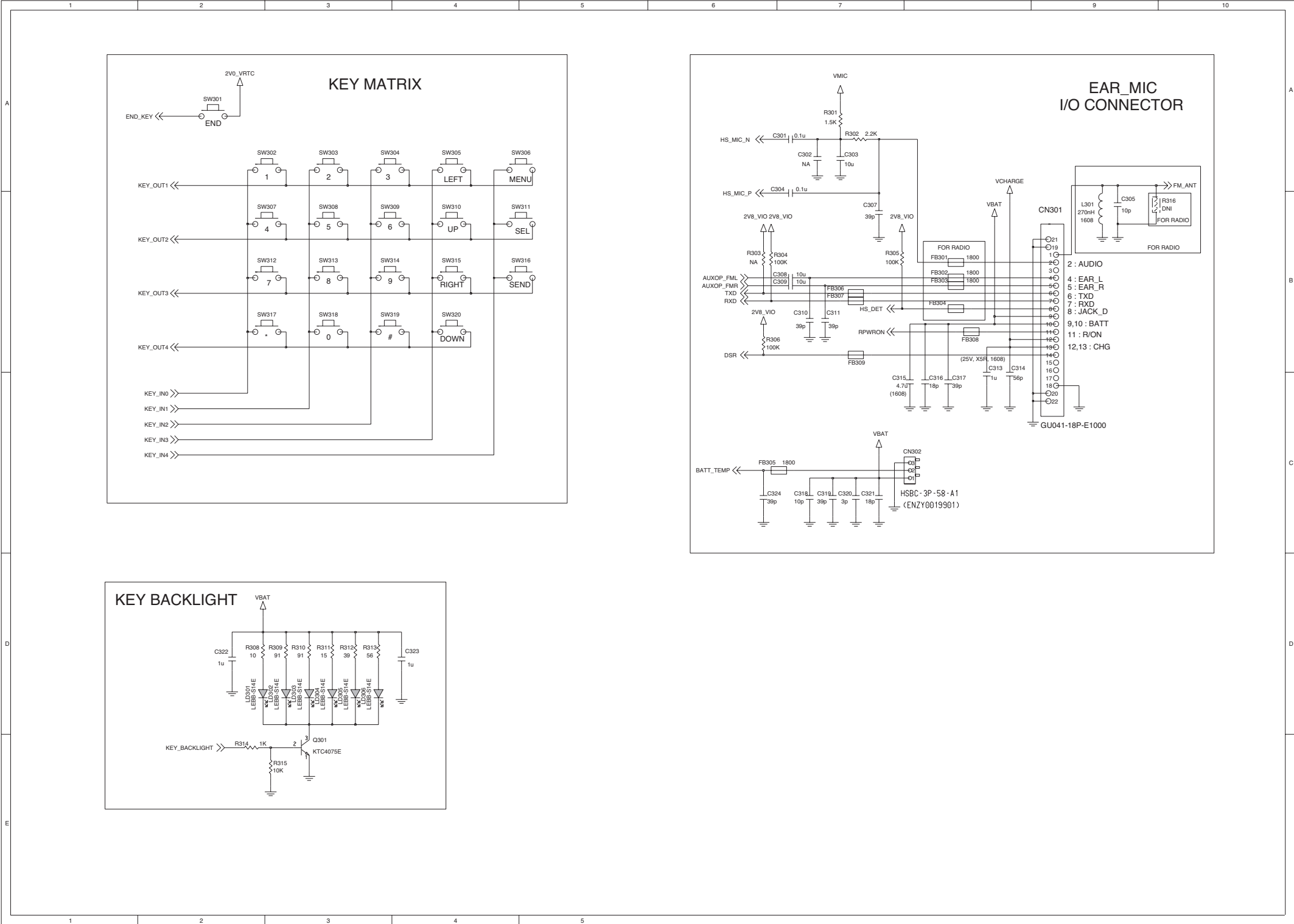
7. CIRCUIT DIAGRAM



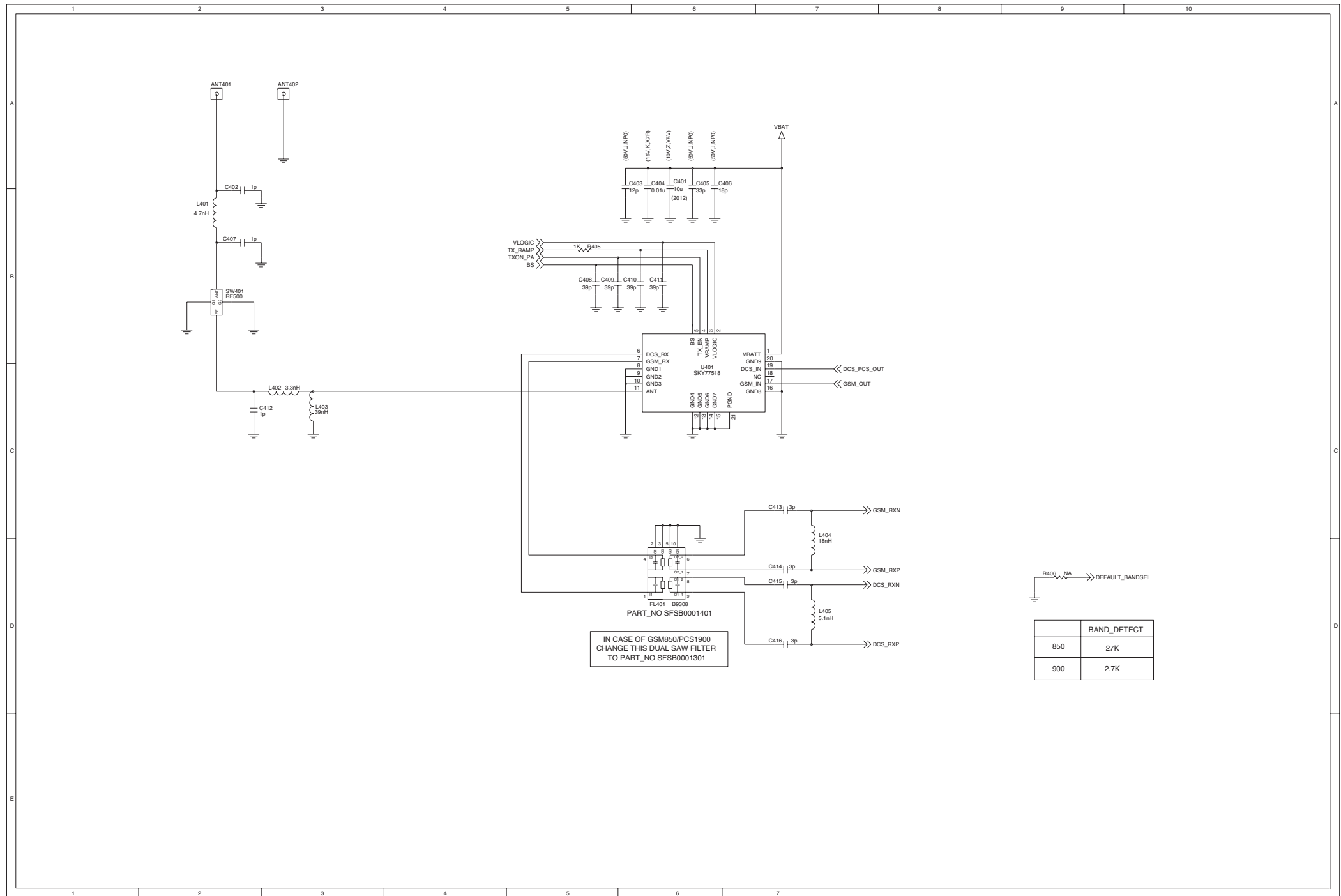
7. CIRCUIT DIAGRAM



7. CIRCUIT DIAGRAM

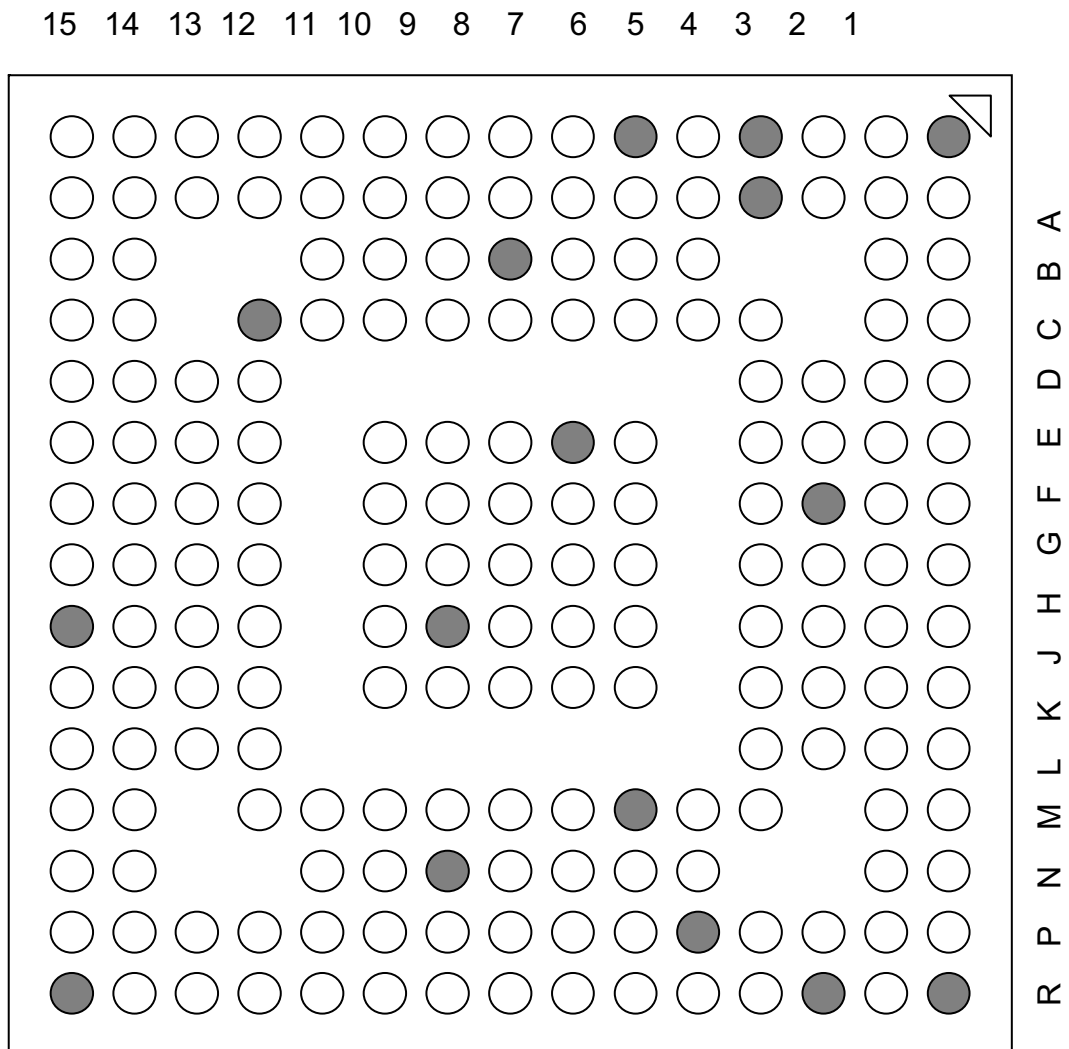


7. CIRCUIT DIAGRAM



8. BGA IC PIN Check

BGA pin Check of Main Chip (Bottom View)



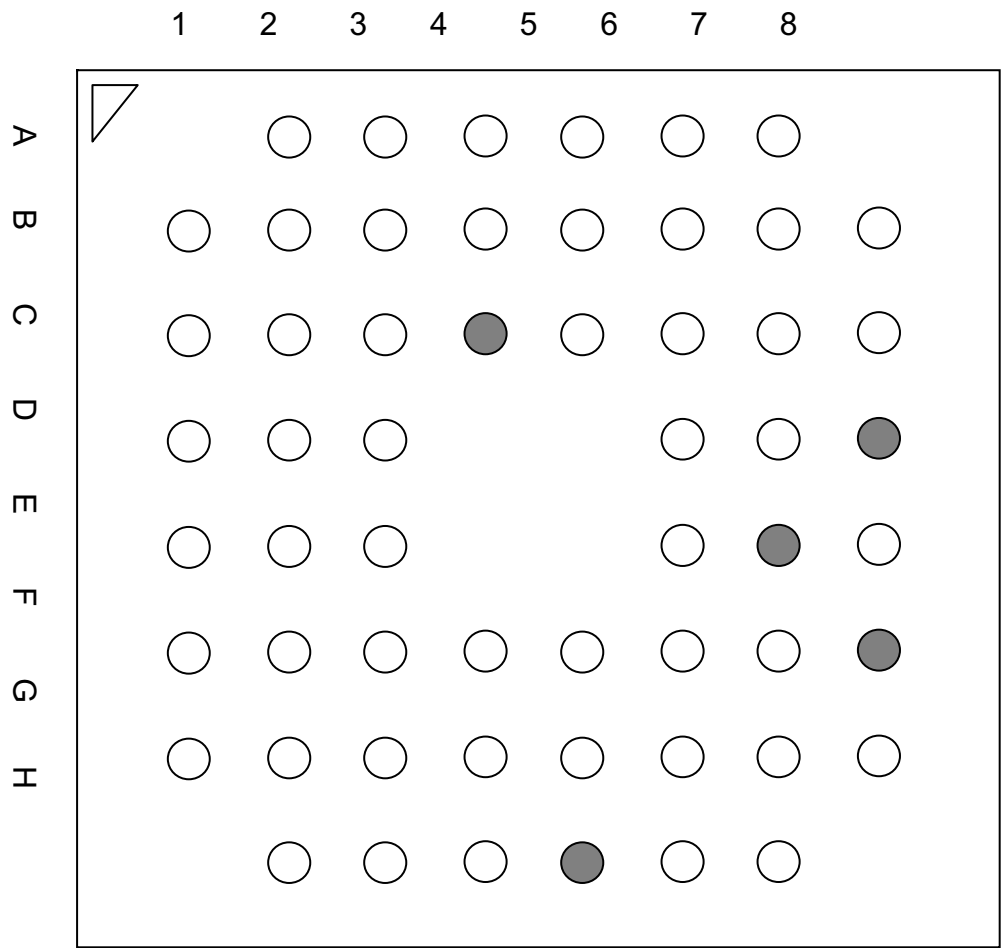
○ Use

● Not Use

U103 Main chip (PMB7880)
(EUSY0317401)

8. BGA IC PIN Check

BGA pin Check of Memory (Top View)

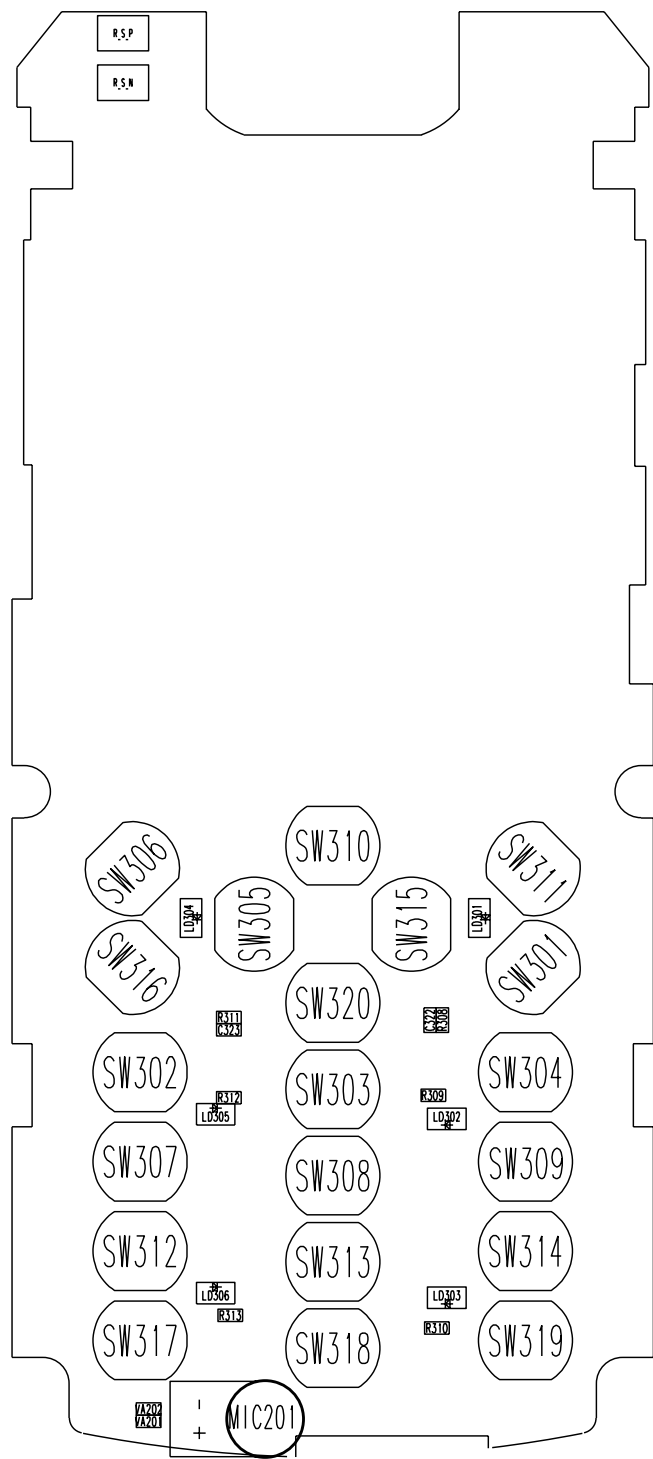


○ Use

● Not Use

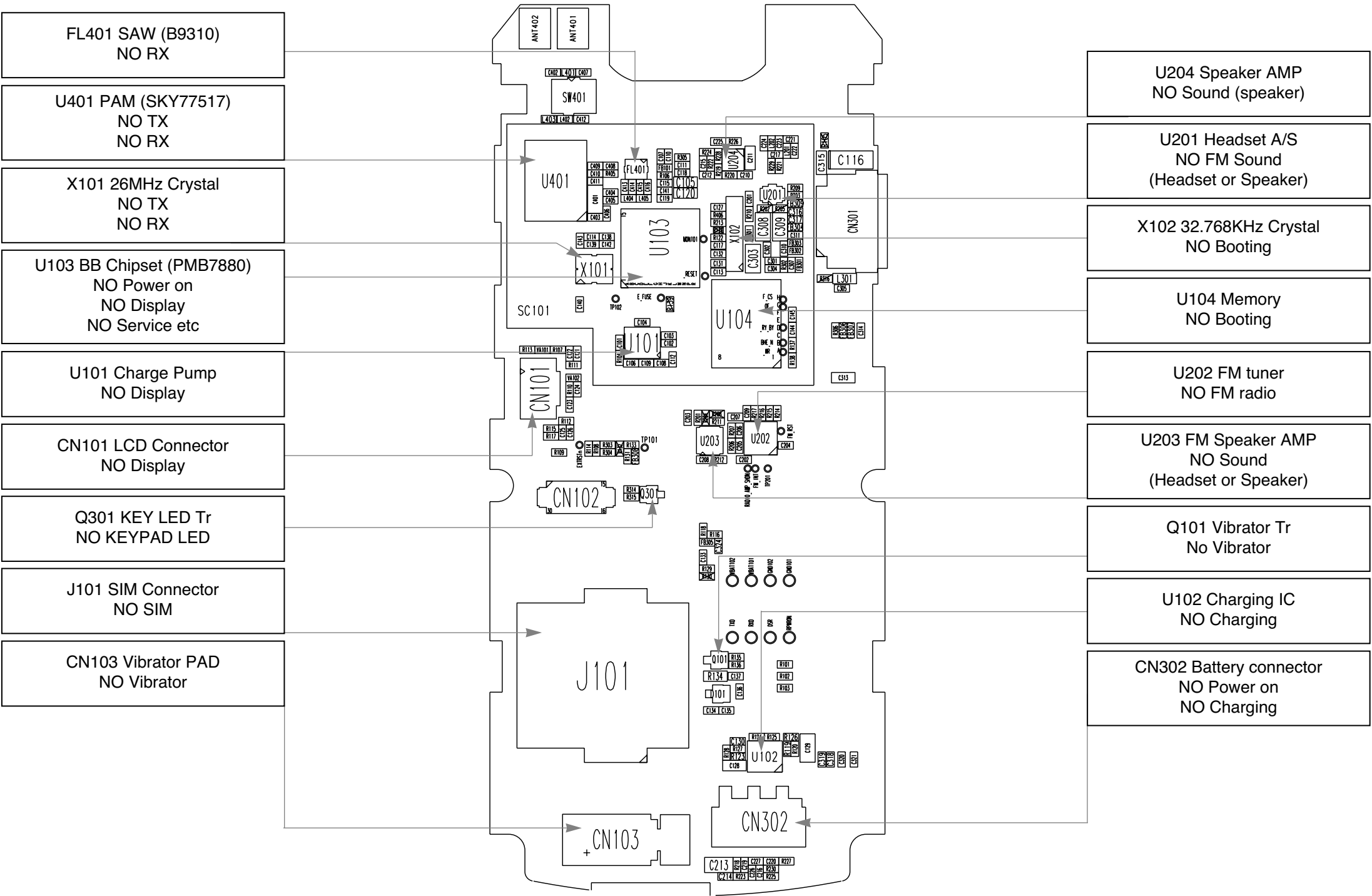
U104 Memory (S71GL032N40BFW0P)
(EUSY0328002)

9. PCB LAYOUT



KP105-MAIN-SPFY0170601-1.0-T0P

9. PCB LAYOUT



KP105-MAIN-SPFY0170601-1.0-BOTTOM

10. ENGINEERING MODE

10.1 About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

10.2 Access Codes

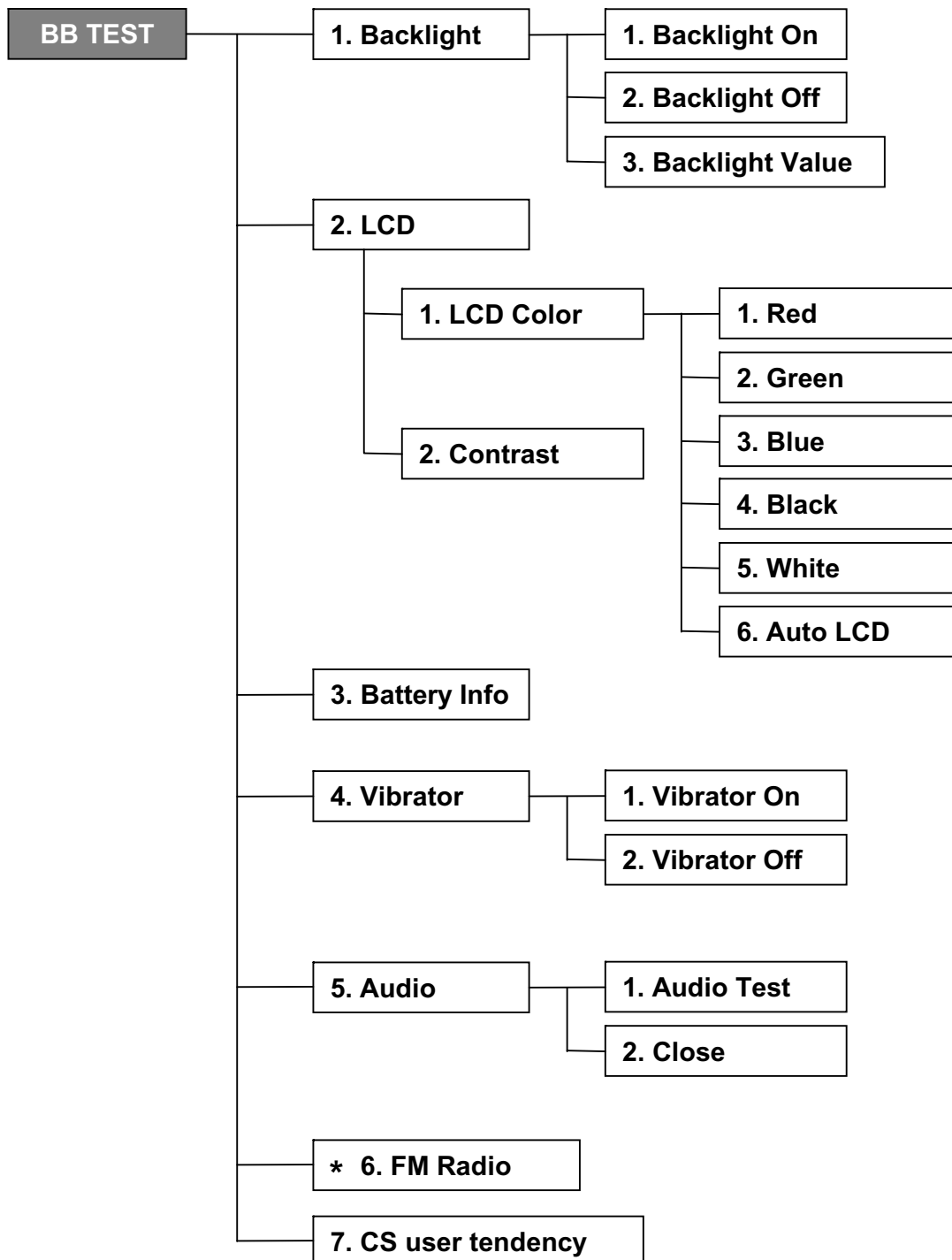
The key sequence for switching the engineering mode on is 2945##. Pressing END will switch back to non-engineering mode operation.

10.3 Key Operation

Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back' key will switch back to the original test menu.

10.4 Engineering Mode Menu Tree

10. ENGINEERING MODE



*** FM Radio function is not supported**

10.4.1 BB Test

10.4.1.1 Backlight

- ① backlight on : LCD backlight is off.
- ② backlight off : LCD backlight is on.
- ③ backlight value : LCD backlight brightness is controlled by 20% from 100 to 0.

10.4.1.2 LCD

- ① LCD color : This menu includes 5 color menu and automatic color change.
5 color menu is Red, Green, Blue, Black and White.
- ② LCD contrast : This menu displays a contrast value and LCD maker.

10.4.1.3 Battery Info

This menu displays the information of battery, as example battery voltage level and temperature.
In line 2, battery voltage level is displayed with average and instant value.
In line 3, battery temperature value is displayed, but this value is ADC value.
In line 4, Icon number of battery voltage is displayed.

10.4.1.4 Vibrator

This menu can control vibrator on and off operation.

10.4.1.5 Audio

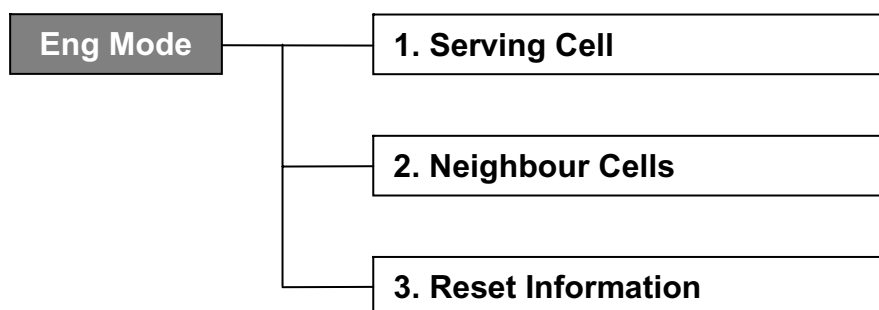
This menu can control MIDI operation

10. ENGINEERING MODE

Model Version

10.4.2 Model Version

This menu displays the Model software version.



10.4.3 Eng Mode

10.4.3.1 Serving Cell

This Menu displays the the informations of Serving Cell environment.

For example, ARFCN, RF Level etc.

ARFCN : Absolut Radio Frequency Channel Number (Frequency Number) of Serving Cell while Idle mode

RxLev : RX level of Serving Cell while Idle mode

C1 : C1 Value of Serving Cell, This value will be used to decide cell reselection.

C2 : C2 Value of Serving Cell, This value will be used to decide cell reselection.

BPM : Paging period of Serving Cell

ARFCND : Absolut Radio Frequency Channel Number (Frequency Number) of Serving Cell while Dedicated mode

RxLf : Full RX level of Serving Cell

RxLs : Sub RX level of Serving Cell

RxQf : Full RX qual of Serving Cell

RxQs : Sub RX qual of Serving Cell

DSC : Downlink Signal Counter

RLL : Radio Link Loss Counter

Chtyp : Channel type of Serving Cell

Chmod : Channel Mode of Serving Cell

DTX : Discontinuous Transmission mode of Serving Cell

MCC : Mobile Country Code of Serving Cell

MNC : Mobile Country Code of Serving Cell

LAC : Location Area Code of Serving Cell

CID : Cell ID of Serving Cell

BSIC : Base Tranceiver Station Identity Code of Serving Cell

TxPwrMax : MS_TXPWR_MAX_CCH value of Serving Cell

RxMin : RXLEV_ACCESS_MIN value of Serving Cell

C2vld : C2_VALID value of Serving Cell

CRoff : CELL_RESELECT_OFFSET value of Serving Cell

TMPoff : TEMPORARY_OFFSET value of Serving Cell

PTime : PENALTY_TIME value of Serving Cell

RF# : Number of frequencies in MA(Mobile Allocation)

T3212 : Periodic Location Update Timer

TxPwrLev : Current Tx power of MS

ACC : Access Control Class

Band : Current Band Information

TA : Current Timing Advance

Cipher : Cipher mode of Serving Cell

CBQ : Cell Bar Quality flag of Serving Cell

CBA : Cell Bar Access flag of Serving Cell

10. ENGINEERING MODE

10.4.3.2 Neighbour Cells

This menu displays the informations of Neighbour Cells.

ARFCN : Absolut Radio Frequency Channel Number (Frequency Number) of Neighbour Cell

RxLev : Rx Level of Neighbour Cell

C1 : C1 Value of Neighbour Cell, This value will be used to decide cell reselection.

C2 : C2 Value of Neighbour Cell, This value will be used to decide cell reselection.

MCC : Mobile Country Code of Neighbour Cell

MNC : Mobile Network Code of Neighbour Cell

LAC : Location Area Code of Neighbour Cell

CID : Cell ID of Neighbour Cell

BSIC : Base Tranceiver Station Identity Code of Neighbour Cell

10.4.3.3 Reset Information

This menu displays the information of reset point in source code, call stack.

Call Timer

10.4.4 Call Timer

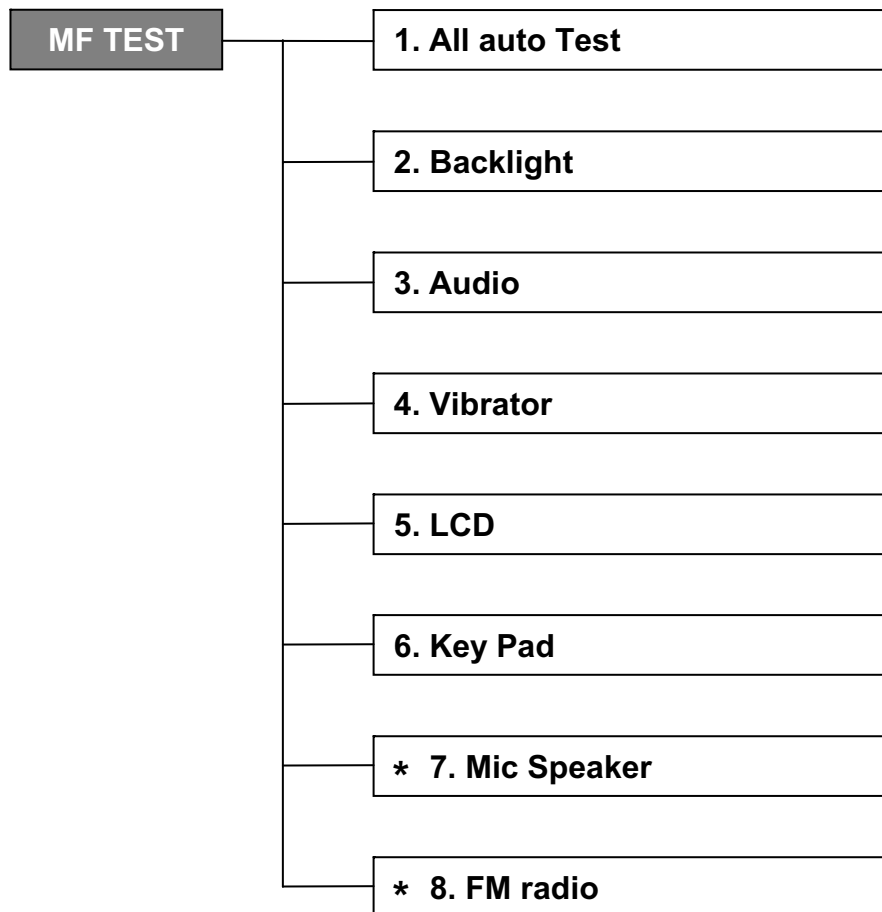
This menu displays the time of all calls, including the received calls.

Factory Reset

10.4.5 Factory Reset

This menu is to format data block in the flash memory and this procedure set up the default value in data block.

10. ENGINEERING MODE



*** function is not supported**

10.4.6 MF TEST

This manufacturing mode is designed to do the baseband test automatically.

Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

10.4.6.1 All auto Test

LCD, Backlight, Vibrator, Buzzer, Key Pad

10.4.6.2 Backlight

LCD Backlight is on for about 1.5 seconds at the same time, then off.

10.4.6.3 Audio

This menu is to test the volume of Melody. It rings in the following sequence.

Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

10.4.6.4 Vibrator

Vibrator is on for about 1.5 seconds.

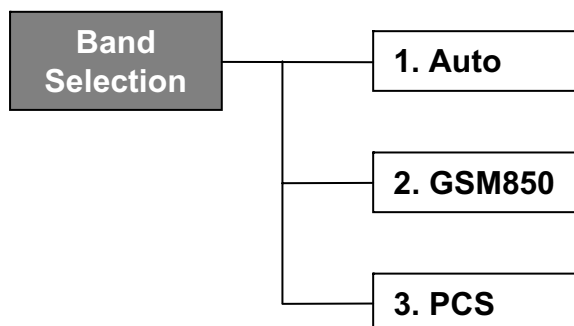
10.4.6.5 LCD

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

10.4.6.6 Key Pad

When a pop-up message shows 'Press Any Key', you may press any keys.

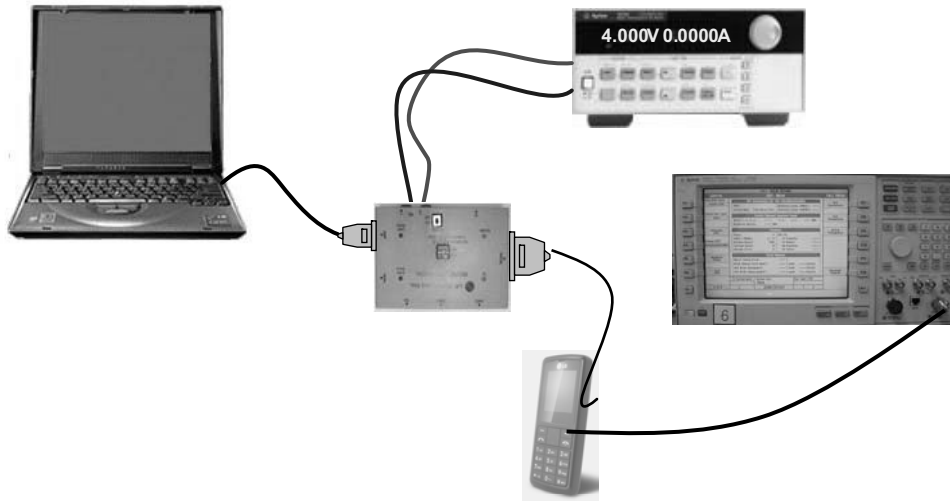
If the key is working properly, name of the key is displayed on the screen.



11. CALIBRATION

11. CALIBRATION

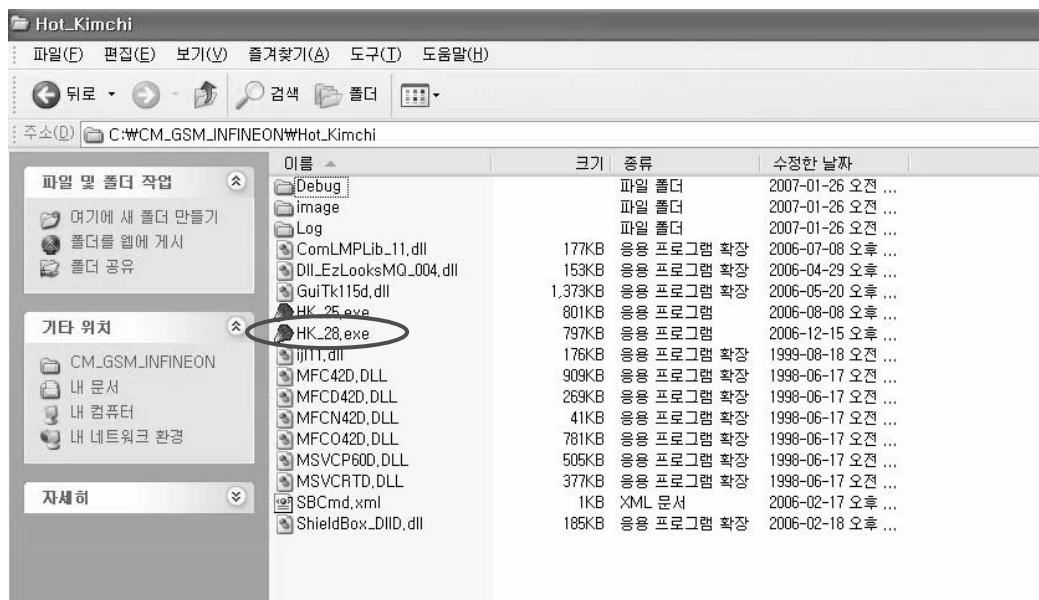
11.1 Test Equipment Setup



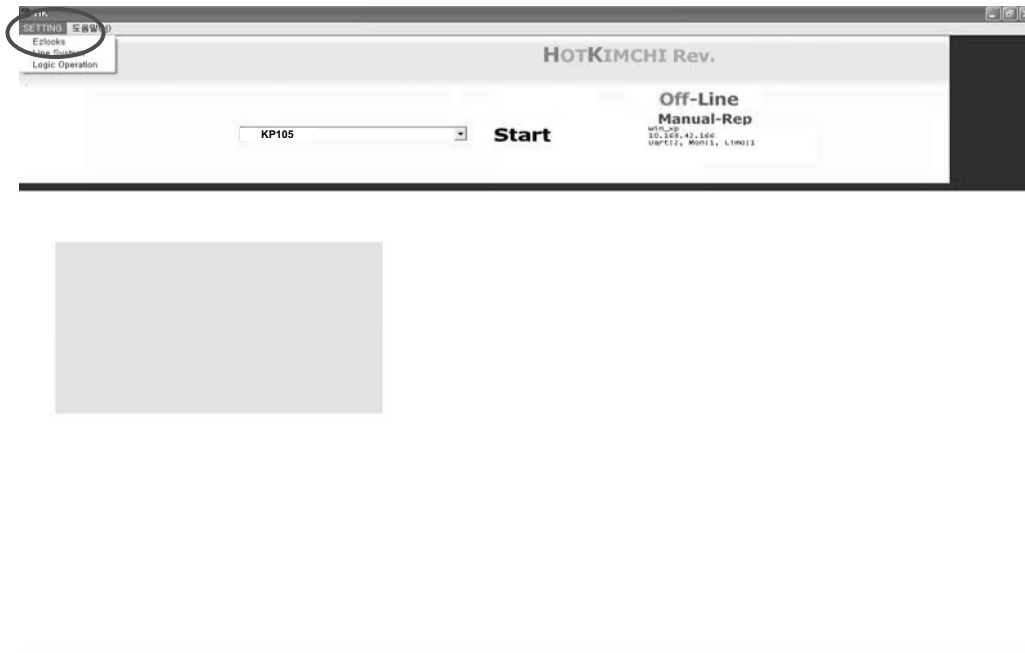
11.2 Calibration Steps

11.2.1 Tune on the phone

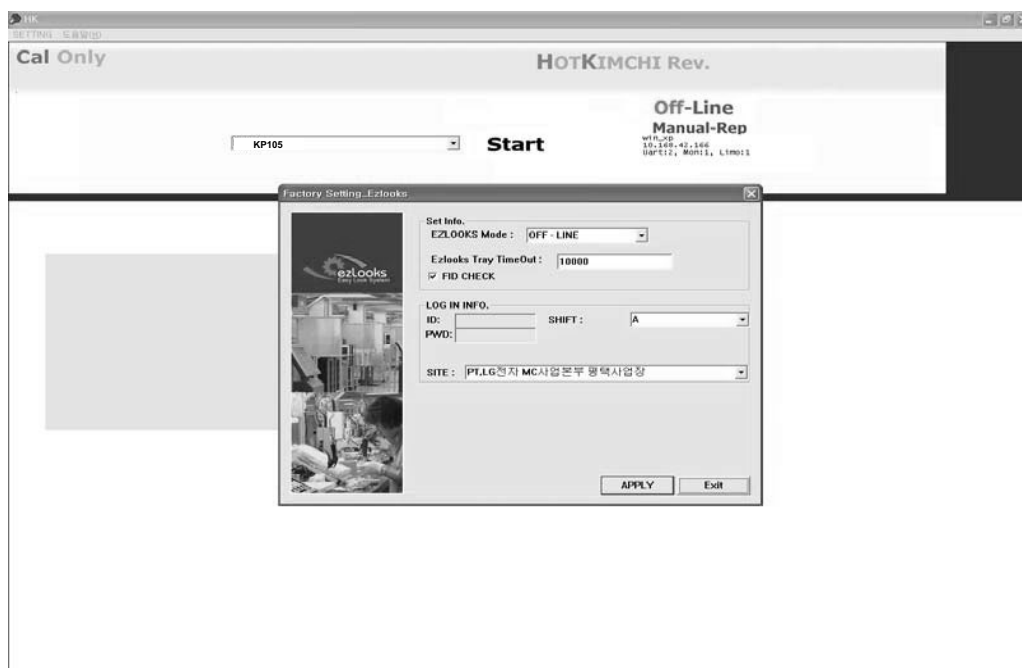
11.2.2 Execute "HK_28.exe"



11.2.3 Click “SETTING” Memu

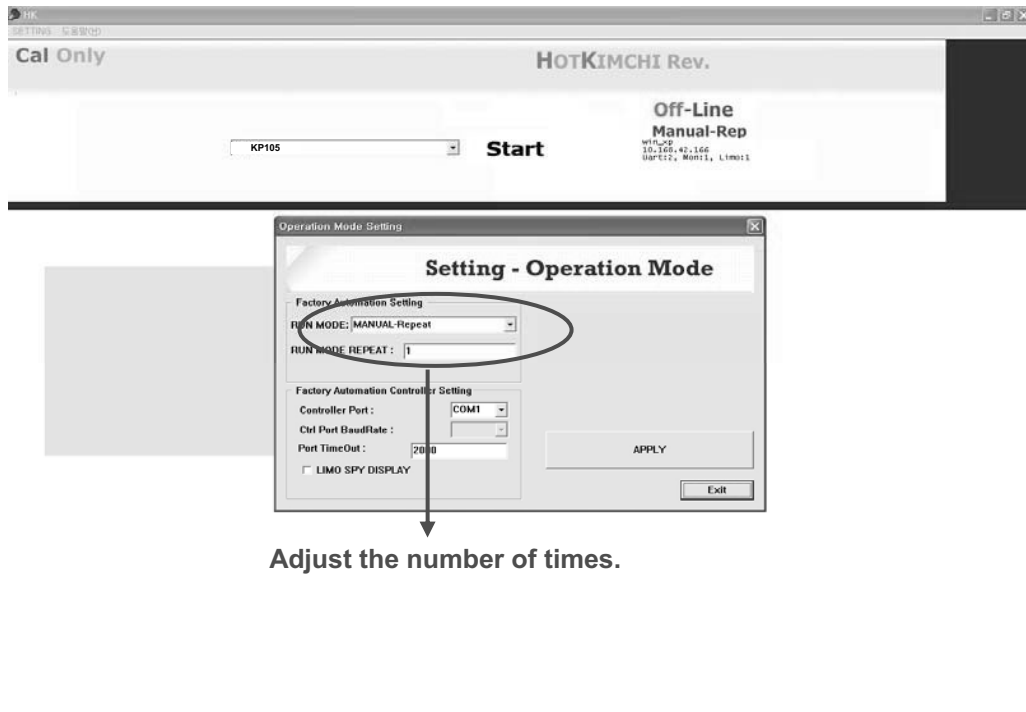


11.2.4 Setup “Ezlooks” menu such as the following figure

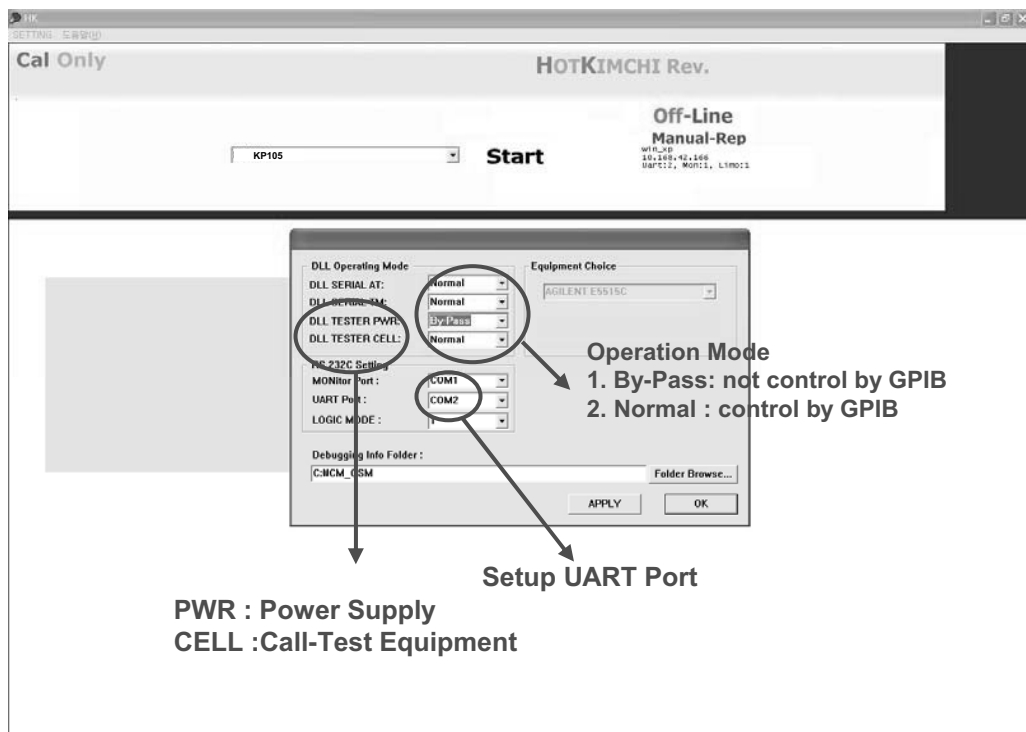


11. CALIBRATION

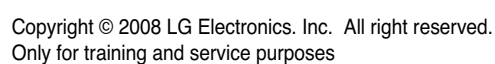
11.2.5 Setup “Line System” menu such as the following figure



11.2.6 Setup Logic operation such as the following figure

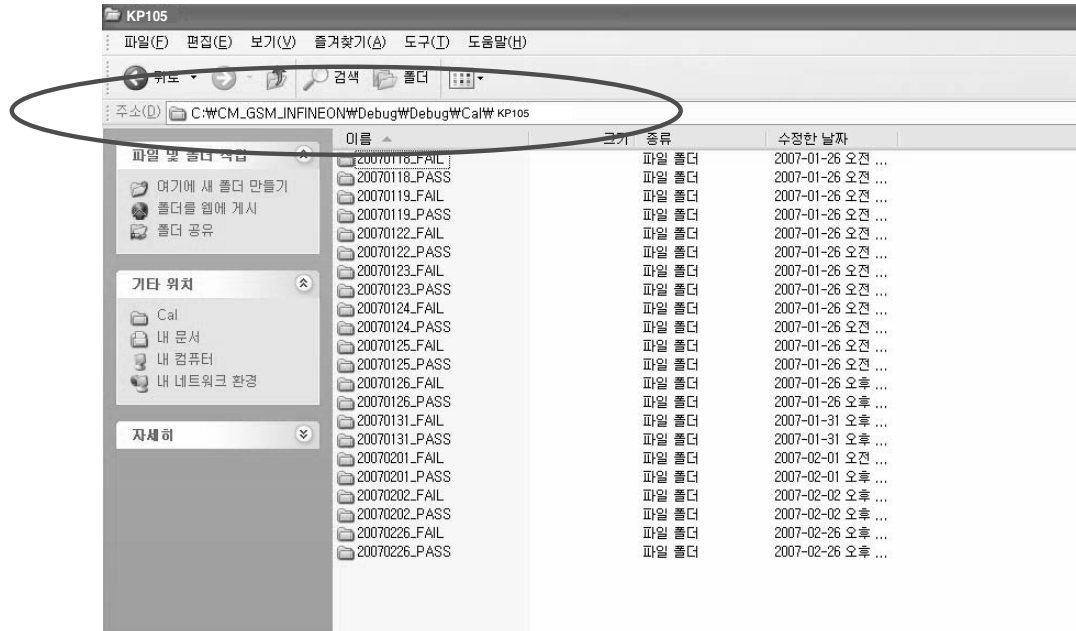


11.2.8 Click “START” for RF calibration



11. CALIBRATION

11.2.10 Calibration data will be saved to the following folder



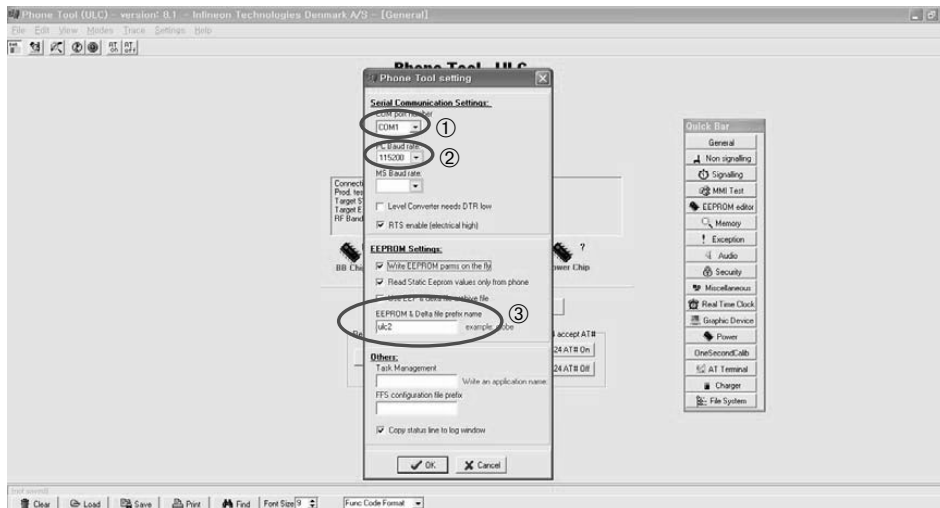
12. STAND ALONE TEST

12.1 Test Program Setting

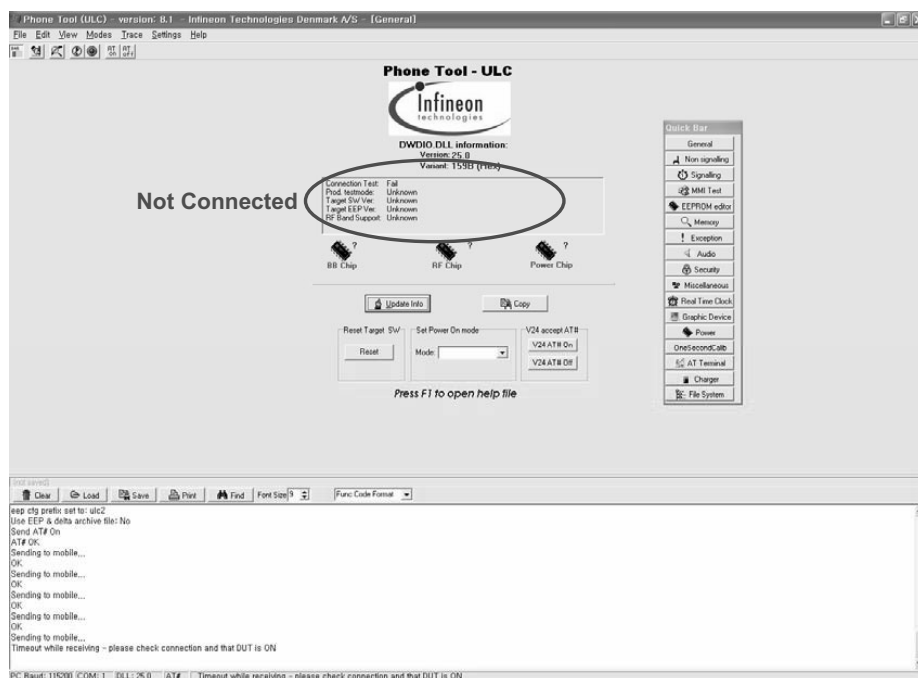
12.1.1 Set COM Port

12.1.2 Check PC Baud rate(115200)

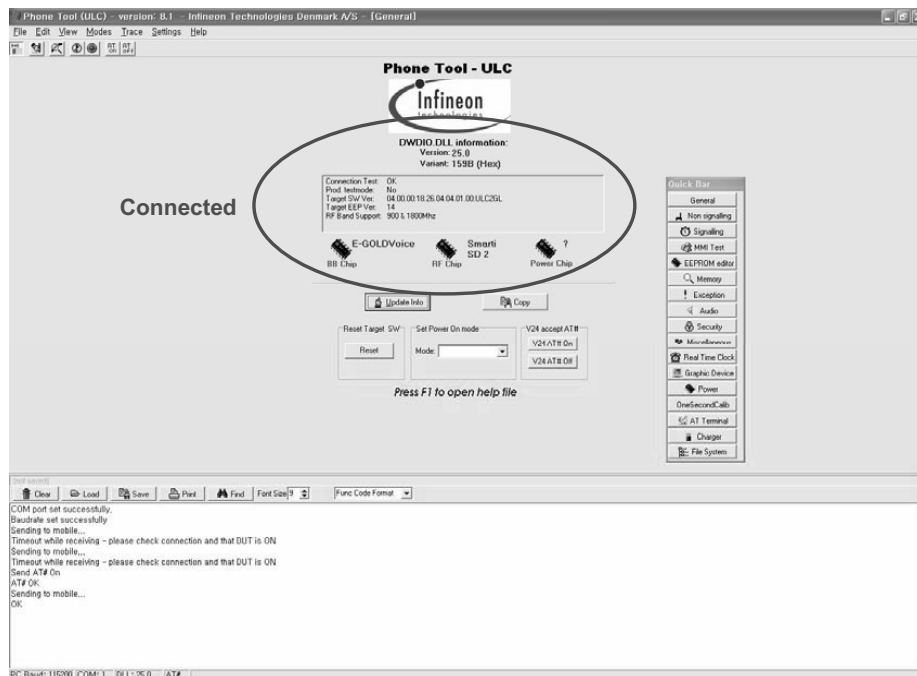
12.1.3 Confirm EEPROM & Delta file prefix name



12.1.4 Click “V24AT#ON” and then “Update Info” for communicating Phone and Test Program

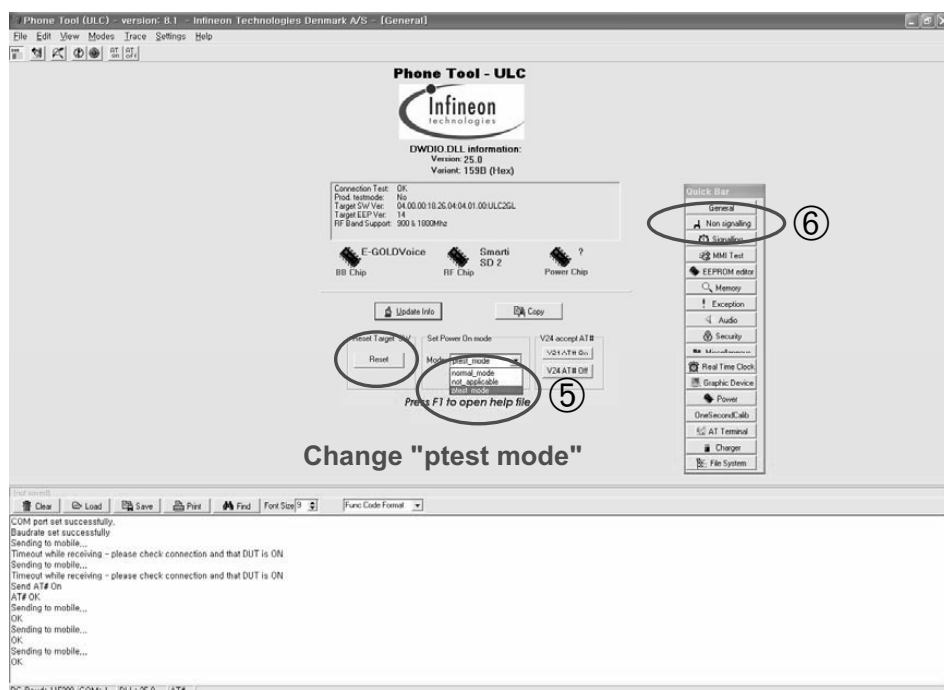


12. STAND ALONE TEST



12.1.5 For the purpose of the Standalone Test, Change the Phone to “ptest mode” and then Click the “Reset” bar.

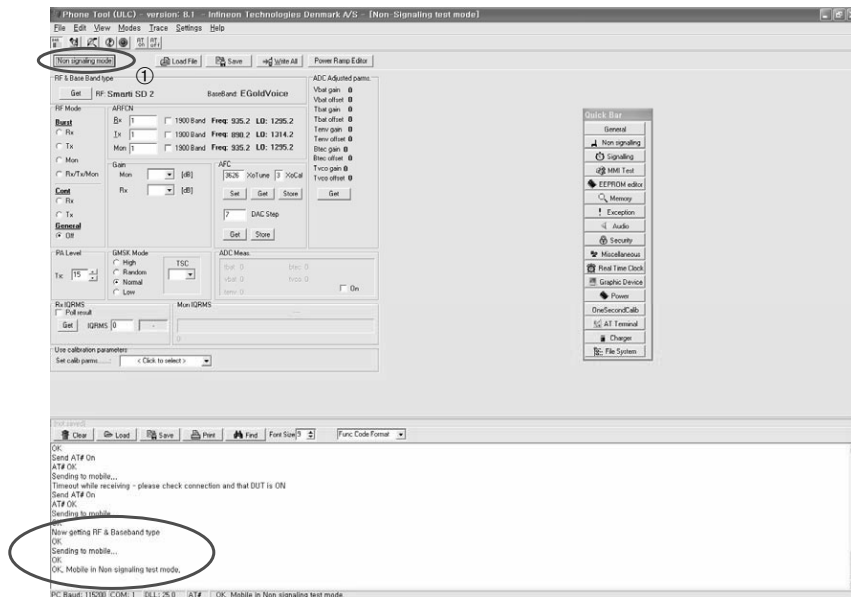
12.1.6 Select “Non signaling” in the Quick Bar menu. Then Standalone Test setup is finished.



12. STAND ALONE TEST

12.2 Tx Test

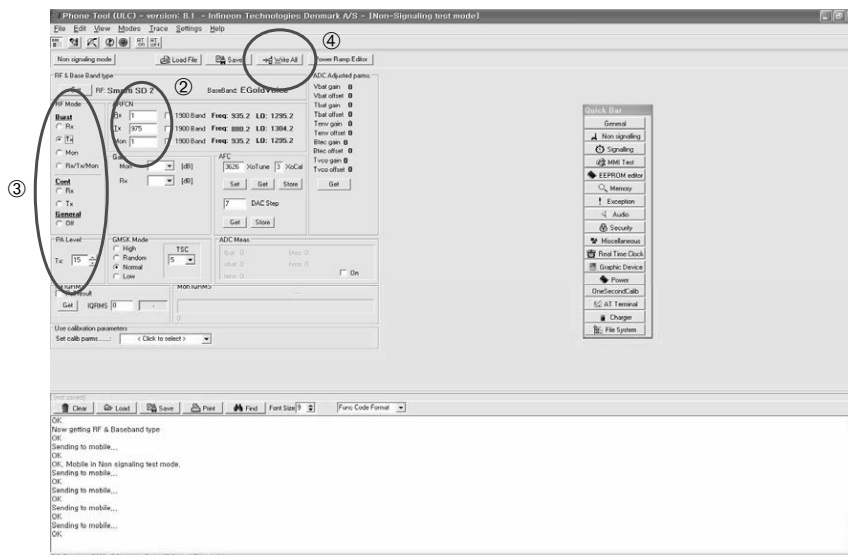
12.2.1 Click “Non signaling mode” bar and then confirm “OK” test in the command line



12.2.2 Put the number of TX Channel in the ARFCN

12.2.3 Select “TX” in the RF mode menu and “PCL” in the PA Level menu

12.2.4 Finally, Click “Write All” bar and try the efficiency test of Phone

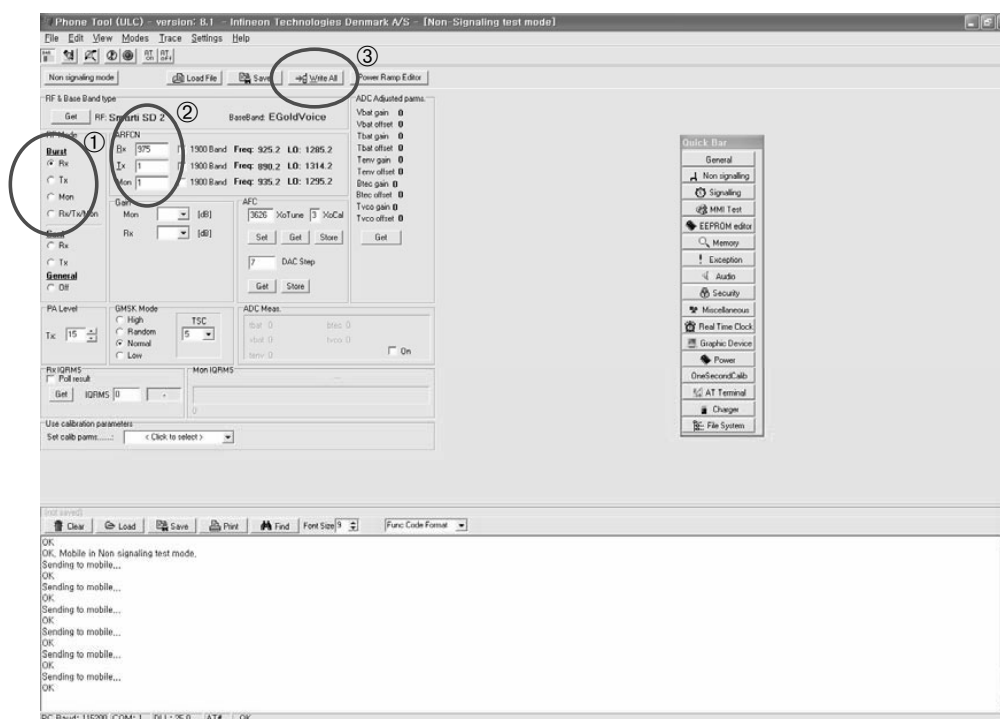


12.3 RX Test

12.3.1 Put the number of RX Channel in the ARFCN

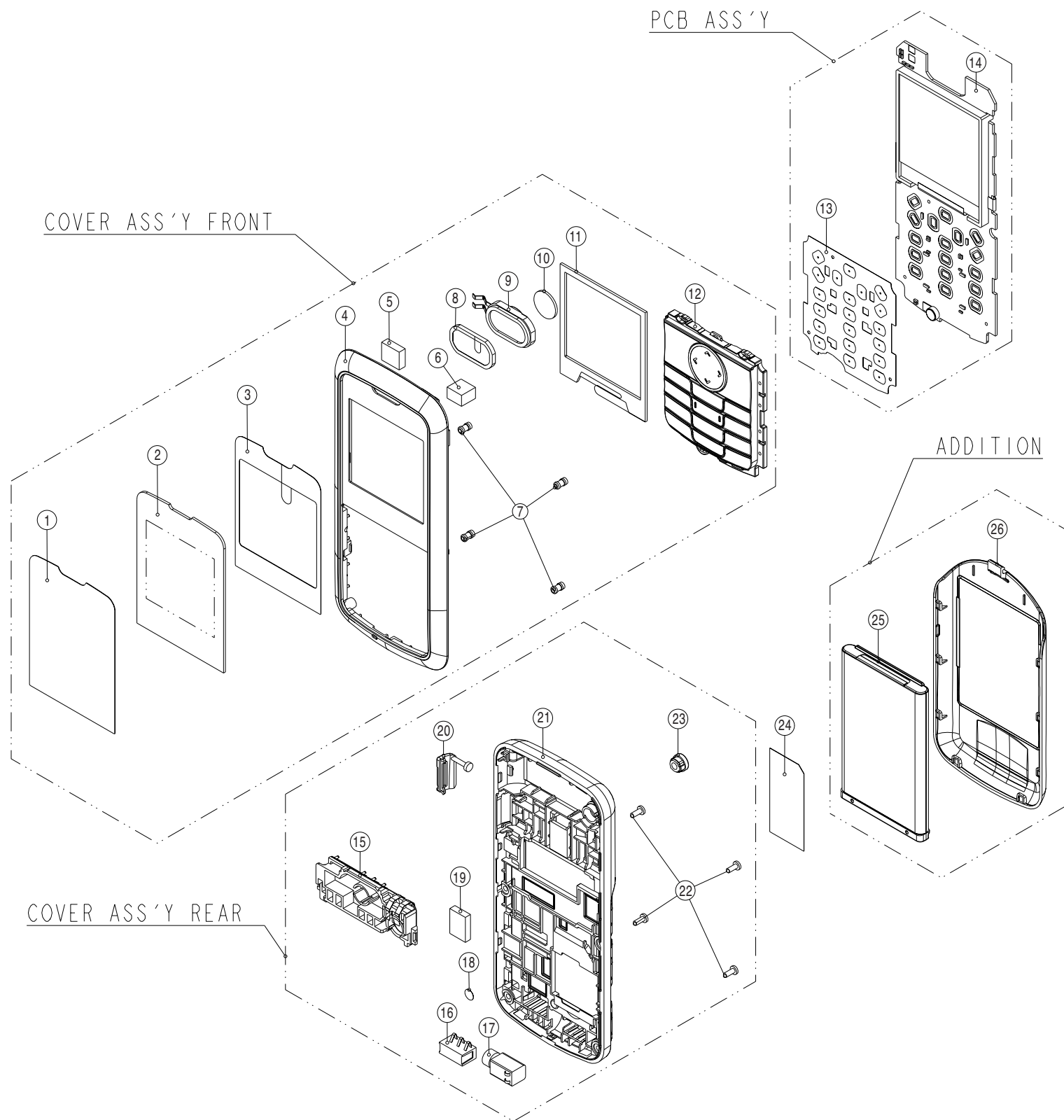
12.3.2 Select “RX” in the RF mode menu

12.3.3 Finally, Click “Write All” bar and try the efficiency test of Phone



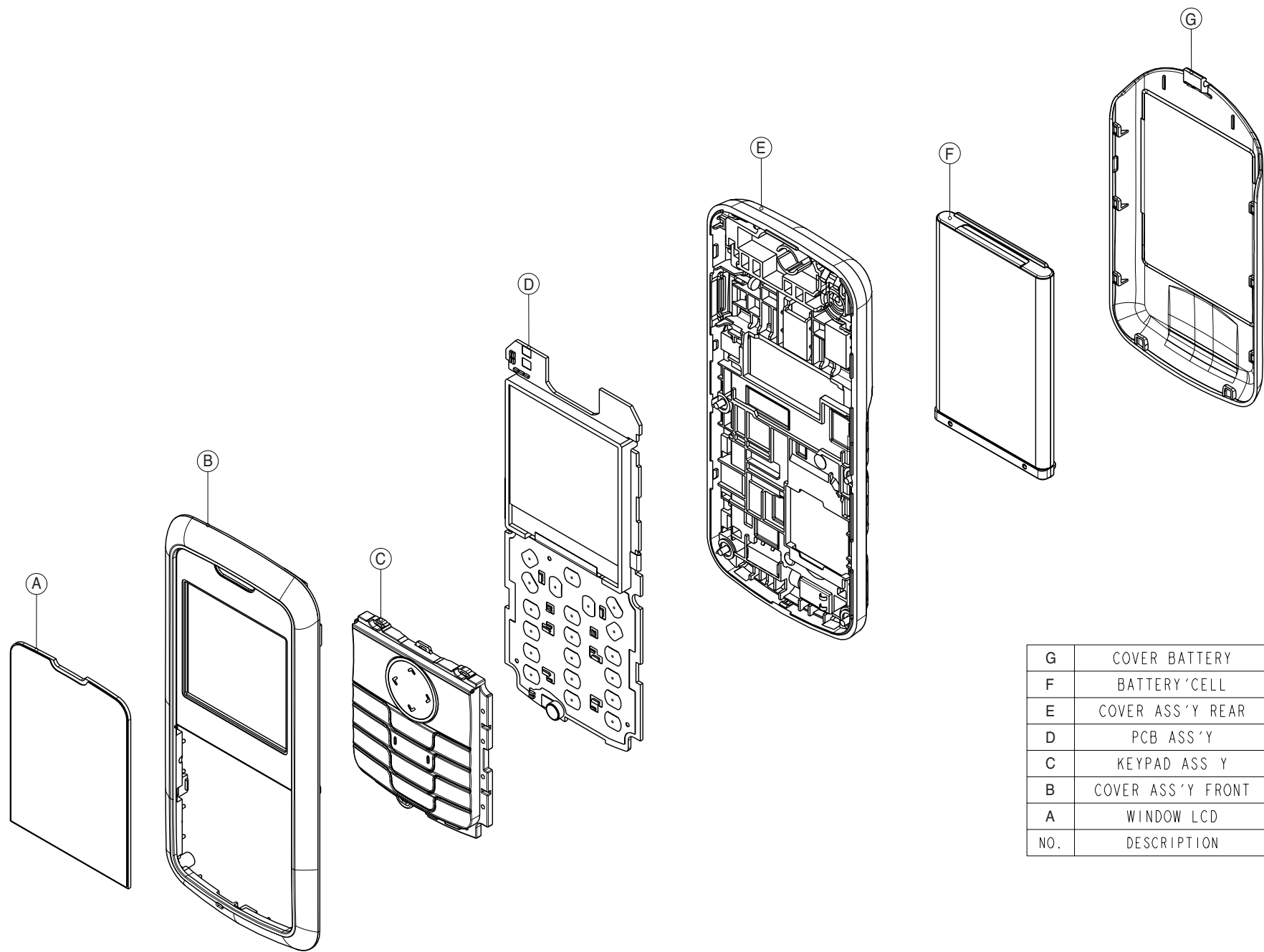
13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 EXPLODED VIEW



26	COVER BATTERY	I	MCJA005040I	
25	BATTERY CELL	I	SBPL008990I	
24	LABEL MODEL	I	MLAK0010805	MADE BY LGE
23	CAP,MOBILE SWITCH	I	MCCF004710I	
22	SCREW MACHINE	4	GMEY000590I	
21	COVER REAR	I	MCJN007300I	
20	CAP MMI	I	MCCC004860I	
19	PAD REAR	I	MPBZ020030I	
18	LABEL ,A/S(병수라벨)	I	MLAB000060I	
17	VIBRATOR MOTOR	I	SJMY0007904	
16	BATTERY CONN 3PIN	I	ENZY001990I	
15	ANTENNA	I	SNGF003000I	850 BAND
14	PCB Ass'y	I	SAFY0242602	
13	DOME Ass'y METAL	I	ADCA007180I	
12	Keypad Ass'y	I	AKAC000210I	중남미(영문)
11	PAD LCD	I	MPBG006900I	
10	PAD ANTENNA	I	MPBM002000I	
9	SPEAKER	I	SUSY002740I	
8	PAD SPEAKER	I	MPBN004720I	
7	INSERT	4	-----	
6	PAD FRONT	I	MPBZ020070I	
5	PAD SPEAKER CONN	I	MPBN005050I	
4	COVER FRONT	I	MTAD007500I	
3	TAPE WINDOW	I	MCJK007730I	
2	WINDOW LCD	I	MWAC008510I	FM RADIO 유
1	TAPE,PROTECTION WINDOW	I	MTAB019350I	
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

13.2 ASS'Y EXPLODED VIEW



G	COVER BATTERY	I	MCJA005040I	
F	BATTERY CELL	I	SBPL008990I	
E	COVER ASS'Y REAR	I	ACGM010160I	
D	PCB ASS'Y	I	SAFY0242602	
C	KEYPAD ASS'Y	I	AKAC000210I	
B	COVER ASS'Y FRONT	I	ACGK010100I	
A	WINDOW LCD	I	MWAC008510I	FM RADIO ㉠
NO.	DESCRIPTION	Q'TY	DRAWING NO.	REMARK

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.2 Replacement Parts <Mechanic component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM,BAR/FILP	TGSM0057703		Black Blue	
2	AAAY00	ADDITION	AAAY0289103		Black Blue	
3	MCJA00	COVER,BATTERY	MCJA0050401	MOLD, PC LUPOY SC-1004A, , , , ,	Black Blue	G, 26
3	MMBB00	MANUAL,OPERATION	MMBB0271201	PRINTING, (empty), , , , ,	Without Color	
2	APEY00	PHONE	APEY0478505		Black Blue	
3	ACGK00	COVER ASSY,FRONT	ACGK0101001		Black Blue	B
4	AKAC00	KEYPAD ASSY,MAIN	AKAC0002101	ENGLISH OPEN	Black Blue	C, 12
4	MCJK00	COVER,FRONT	MCJK0077301	MOLD, PC LUPOY SC-1004A, , , , ,	Black Blue	4
4	MPBG00	PAD,LCD	MPBG0069001	SINTERING, (empty), , , , ,	Without Color	11
4	MPBM00	PAD,RECEIVER	MPBM0020001	SINTERING, (empty), , , , ,	Without Color	10
4	MPBN00	PAD,SPEAKER	MPBN0047201	SINTERING, (empty), , , , ,	Without Color	8
4	MPBN01	PAD,SPEAKER	MPBN0050501	SINTERING, (empty), , , , ,	Without Color	5
4	MPBZ00	PAD	MPBZ0200701	SINTERING, (empty), , , , ,	Without Color	6
4	MTAB00	TAPE,PROTECTION	MTAB0193501	SINTERING, (empty), , , , ,	Without Color	1
4	MTAD00	TAPE,WINDOW	MTAD0075001	SINTERING, (empty), , , , ,	Without Color	3
4	MWAC00	WINDOW,LCD	MWAC0085101	CUTTING, PMMA MR 200, , , , ,	Without Color	A, 2
3	ACGM00	COVER ASSY,REAR	ACGM0101601		Black Blue	E
4	ENZY00	CONNECTOR,ETC	ENZY0019901	3 PIN,3 mm,STRAIGHT , ,		16
4	MCCC00	CAP,EARPHONE JACK	MCCC0048601	MOLD, Urethane Rubber S185A, , , , ,	Black Blue	20
4	MCCF00	CAP,MOBILE SWITCH	MCCF0047101	MOLD, Silicone Rubber KE941-U, , , , ,	Black Blue	23
4	MCJN00	COVER,REAR	MCJN0073001	MOLD, PC LUPOY SC-1004A, , , , ,	Black Blue	21
4	MLAB00	LABEL,A/S	MLAB0000601	PRINTING, (empty), , , , ,	Without Color	18
4	MPBZ00	PAD	MPBZ0200301	SINTERING, (empty), , , , ,	Without Color	19
3	MLAK00	LABEL,MODEL	MLAK0010804	PRINTING, (empty), , , , ,	Without Color	24

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	ADCA00	DOME ASSY,METAL	ADCA0071801		Without Color	13
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
6	SC101	CAN ASSY,SHIELD	ACKA0004001		Silver	
7	MCBA00	CAN,SHIELD	MCBA0025001	PRESS, Ni, , , ,	Without Color	
7	MFEA00	FRAME,SHIELD	MFEA0018101	PRESS, Ni, , , ,	Without Color	

13. EXPLODED VIEW & REPLACEMENT PART LIST

<Main component>

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
4	SUSY00	SPEAKER	SUSY0027401	PIN ,8 ohm,88 dB, mm, , , , , , ,18*10*3T ,PIN		9
4	SJMY00	VIBRATOR,MOTOR	SJMY0007904	3 V, .1 A,4*8 ,height 5.8mm , , ,3V , , ,11000 , , , ,		17
		VIBRATOR,MOTOR	SJMY0007905	3 V,0.08 A,5.8*5.1*9 ,cylinder motor , , ,3V , , ,11000 , , , ,29		
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0030001			15
3	GMEY00	SCREW MACHINE,BIND	GMEY0005901	1.4 mm,3.5 mm,MSWR3(BK) ,B ,+ ,HEAD D=2.7MM		22
3	SAFY00	PCB ASSY,MAIN	SAFY0242616			D, 14
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0079401			
5	SUMY00	MICROPHONE	SUMY0003802	FPCB , -42 dB,4*1.5 ,		
5	SVLM00	LCD MODULE	SVLM0024402	MAIN ,128*128 ,35.78*39.7*2.7 ,65k ,CSTN ,TM ,S6B33BG ,1.52" Serial IF Only for CI		
		LCD MODULE	SVLM0024403	MAIN ,128*128 ,35.78*39.7*2.7 ,65k ,CSTN ,TM ,ST7637 ,1.52" Serial IF Second_development		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0158612			
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0101601			
6	C101	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C102	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C116	CAP,TANTAL,CHIP,MAKER	ECTZ0003704	22 uF,6.3V ,K ,STD ,3216 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C119	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C120	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C122	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C123	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C125	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C129	CAP,CHIP,MAKER	ECZH0001703	2200000 pF,25V ,Z ,Y5V ,HD ,2012 ,R/TP , , , [empty] [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C130	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C131	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C134	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C136	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C137	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C138	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0000163	47 nF,10V,K,X5R,HD,1005,R/TP		
6	C141	CAP,CHIP,MAKER	ECZH0001106	4700 pF,25V ,K ,X7R ,HD ,1005 ,R/TP		
6	C142	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C143	CAP,CHIP,MAKER	ECZH0001106	4700 pF,25V ,K ,X7R ,HD ,1005 ,R/TP		
6	C144	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C145	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C201	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C203	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C204	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C205	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C206	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C207	CAP,CERAMIC,CHIP	ECCH0000179	22 nF,16V ,K ,X5R ,HD ,1005 ,R/TP		
6	C208	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C209	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C210	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C211	CAP,CERAMIC,CHIP	ECCH0005603	2.2 uF,10V ,K ,X5R ,TC ,1608 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C213	CAP,CERAMIC,CHIP	ECCH0006501	10000000 pF,6.3V ,K ,X5R ,TC ,2012 ,R/TP , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C214	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C215	CAP,CHIP,MAKER	ECZH0001217	470 nF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C217	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C219	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0000161	33 nF,16V,K,X7R,HD,1005,R/TP		
6	C221	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000112	15 pF,50V,J,NP0,TC,1005,R/TP		
6	C225	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C301	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0006501	10000000 pF,6.3V ,K ,X5R ,TC ,2012 ,R/TP , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C304	CAP,CHIP,MAKER	ECZH0003103	0.1 uF,10V ,K ,X7R ,HD ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0006501	10000000 pF,6.3V ,K ,X5R ,TC ,2012 ,R/TP , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C309	CAP,CERAMIC,CHIP	ECCH0006501	10000000 pF,6.3V ,K ,X5R ,TC ,2012 ,R/TP , , [empty] ,[empty] , [empty] , [empty] , [empty] , [empty] , 1.25 mm		
6	C310	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C313	CAP,CHIP,MAKER	ECZH0003503	1 uF,25V ,K ,X5R ,HD ,1608 ,R/TP		
6	C314	CAP,CHIP,MAKER	ECZH0000841	56 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C315	CAP,CERAMIC,CHIP	ECCH0007802	4.7 uF,10V ,M ,X5R ,TC ,1608 ,R/TP		
6	C316	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C317	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C318	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C319	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C320	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C321	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C324	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0003002	10000000 pF,10V,Z,Y5V,HD,2012,R/TP,,,[empty] ,[empty],[empty],[empty],[empty],[empty],1.25 mm		
6	C402	CAP,CERAMIC,CHIP	ECCH0000183	1.8 pF,50V,C,NP0,TC,1005,R/TP		
6	C403	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V,J,NP0,TC,1005,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C405	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V,J,NP0,TC,1005,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C407	CAP,CHIP,MAKER	ECZH0000803	2 pF,50V,C,NP0,TC,1005,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C411	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C413	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C415	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C416	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	CN101	CONNECTOR,FFC/FPC	ENQY0014701	13 PIN,mm,ANGLE,,,,0.30MM,FPC,ANGLE ,BOTTOM,SMD,[empty],LOCKING,		
6	CN301	CONNECTOR,I/O	ENRY0006801	18 PIN,0.4 mm,ETC,,,,18,0.40MM,ANGLE ,RECEPTACLE,SMD,R/TP,		
6	D101	DIODE,SWITCHING	EDSY0014001	SMT,20 V,200 A,R/TP,		
6	FB101	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB301	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB302	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB303	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB304	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB305	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB306	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		
6	FB307	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005,Chip bead,;,1800ohm,;,[empty],R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FB308	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ,; ,1800ohm ,; ,[empty] ,R/TP		
6	FB309	FILTER,BEAD,CHIP	SFBH0008105	1800 ohm,1005 ,Chip bead ,; ,1800ohm ,; ,[empty] ,R/TP		
6	FL401	FILTER,SAW,DUAL	SFSB0001301	881.5 MHz,25 MHz,1.8 dB,30 dB,1960 MHz,60 MHz,2.3 dB,12 dB,2.0*1.6*0.68 ,SMD ,869M~894M,1930M~1990M,10p,B,150_82,150_18,GSM 850+PCS Rx ,; ,881.5, 1960 ,2.0*1.6*0.68 ,SMD ,R/TP		
6	J101	CONN,SOCKET	ENSY0018101	6 PIN,ETC , ,2.54 mm,H=1.5		
6	L201	INDUCTOR,CHIP	ELCH0005004	22 nH,J ,1005 ,R/TP ,		
6	L202	INDUCTOR,CHIP	ELCH0005004	22 nH,J ,1005 ,R/TP ,		
6	L301	INDUCTOR,CHIP	ELCH0001556	270 nH,J ,1608 ,R/TP ,		
6	L401	INDUCTOR,CHIP	ELCH0004709	3.3 nH,S ,1005 ,R/TP ,		
6	L402	INDUCTOR,CHIP	ELCH0004721	2.2 nH,S ,1005 ,R/TP ,		
6	L403	INDUCTOR,CHIP	ELCH0004716	39 nH,J ,1005 ,R/TP ,		
6	L404	INDUCTOR,CHIP	ELCH0001032	18 nH,J ,1005 ,R/TP ,PBFREE		
6	L405	INDUCTOR,CHIP	ELCH0003814	5.1 nH,S ,1005 ,R/TP ,5.1nH,1005		
6	Q101	TR,BJT,NPN	EQBN0007101	EMT3 ,0.15 W,R/TP ,LOW FREQUENCY		
6	Q301	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
6	R101	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R104	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	R107	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R110	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R112	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000507	68 Kohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000287	47 Kohm,1/16W ,F ,1005 ,R/TP		
6	R119	RES,CHIP,MAKER	ERHZ0000487	470 Kohm,1/16W ,J ,1005 ,R/TP		
6	R120	RES,CHIP	ERHY0003401	1800 ohm,1/16W ,J ,1005 ,R/TP		
6	R121	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R122	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R123	RES,CHIP,MAKER	ERHZ0000501	620 ohm,1/16W ,J ,1005 ,R/TP		
6	R125	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R126	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R127	RES,CHIP,MAKER	ERHZ0000237	20 Kohm,1/16W ,F ,1005 ,R/TP		
6	R128	RES,CHIP,MAKER	ERHZ0000278	3900 ohm,1/16W ,F ,1005 ,R/TP		
6	R129	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R131	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R133	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R134	RES,CHIP,MAKER	ERHZ0000702	10 ohm,1/10W ,J ,1608 ,R/TP		
6	R135	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R136	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R137	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R138	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000467	330 Kohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000450	240 Kohm,1/16W ,J ,1005 ,R/TP		
6	R210	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000454	27 Kohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R218	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R219	RES,CHIP,MAKER	ERHZ0000414	120 Kohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R222	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R223	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R224	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0100401			
6	C322	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C323	CAP,CHIP,MAKER	ECZH0001215	1 uF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	LD301	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD302	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD303	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD304	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD305	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD306	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	R308	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R309	RES,CHIP,MAKER	ERHZ0000517	91 ohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP,MAKER	ERHZ0000517	91 ohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000419	15 ohm,1/16W ,J ,1005 ,R/TP		
6	R312	RES,CHIP,MAKER	ERHZ0000473	39 ohm,1/16W ,J ,1005 ,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000495	56 ohm,1/16W ,J ,1005 ,R/TP		
6	SPFY00	PCB,MAIN	SPFY0170601	FR-4 ,0.8 mm,BUILD-UP 4 ,GOLD Plated, Non Halogen Free ; , , , , , , , , , ,		
6	VA201	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	VA202	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.3 Accessory

Note: This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SBPL00	BATTERY PACK,LI-ION	SBPL0089904	3.7 V,900 mAh,1 CELL,PRISMATIC ,KP105 Latin America BATT, Pb-Free ,; ,3.7V ,900mAh ,0.2C ,PRISMATIC ,50x34x46 , ,BLACK ,Innerpack ,Latin America Label	Black	F, 25
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003213	; ,10mW ,16 OHM ,105dB ,10KHZ ,450HZ ,[empty] ,BLACK,EARPHONE HOUSING:SILVER ,18P MMI CONNECTOR ,LOW COST STEREO,18P(5P) ,		
3	SSAD00	ADAPTOR,AC-DC	SSAD0028201	100-240V ,5060 Hz,5.6 V, .4 A,CE ,AC-DC Adaptor ,; ,85Vac~264Vac ,5.6V +/-0.8V ,400mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		
		ADAPTOR,AC-DC	SSAD0028202	100-240V ,5060 Hz,5.6 V,0.4 A,CE ,AC-DC Adaptor ,; ,85Vac~264Vac ,5.6V (+/-0.8V) ,400mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		
		ADAPTOR,AC-DC	SSAD0028203	100-240V ,5060 Hz,5.6 V, .4 A,CE ,AC-DC Adaptor ,; ,85Vac~264Vac ,5.6V +/-0.8V ,400mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		

Note
